ORDER NO. KMS9904392S3

Service Manual

Supplement-3

and Technical Guide

EXTENSION EXPANSION CARD

KX-TD170X

(for Asia, Middle Near East and other areas)

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians.
Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

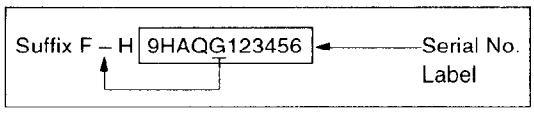
CHANGES

Subject:

Suffix	Reason for suffix change
F → G	Change of the Main Board. (PQUP10093YB → PQUP10448ZD)
G → H	Change of the Main Board. (PQUP10448ZD → PQUP10448YB)

Suffix location:

(Example)



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■ REPLACEMENT PARTS LIST ..... Change from original manual pages 31 ~ 32.

Reason for Change	Following 1-8 reasons are indicated on the Notes in the bottom column.
1. Improve performance	
2. Change of material or dimension	
3. To meet approved specification	
4. Standardization	
5. Addition	
6. Deletion	
7. Correction	
8. Other	

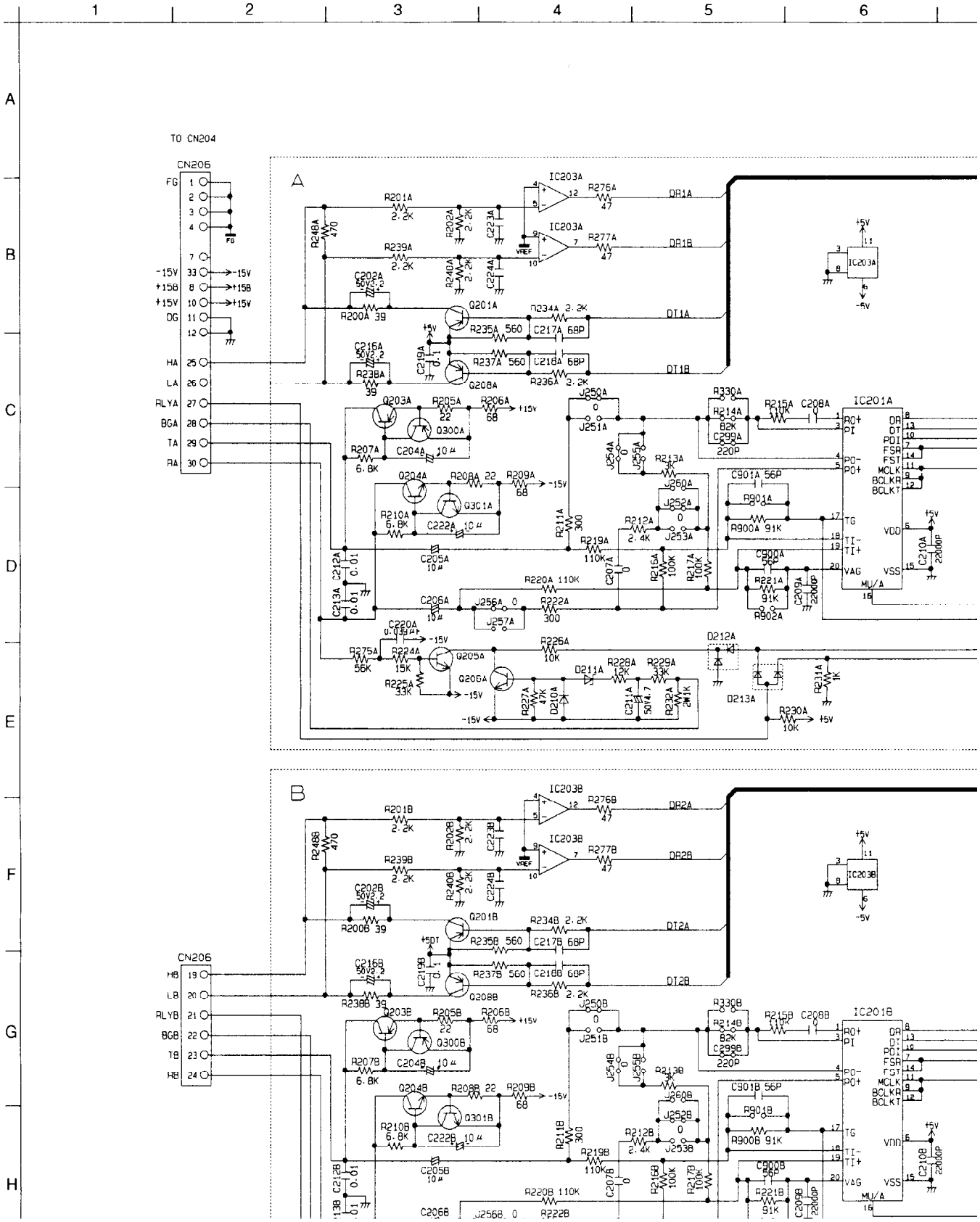
Interchangeability Code Following V-Z interchangeabilities are indicated on the Notes in the bottom column.

	Parts	Set Production	Description
V	Original New	Early (before change) Late (after change)	Original or new parts may be used in early or late production sets. Use original parts until exhausted, then stock new parts.
W	Original New	Early (before change) Late (after change)	Original parts may be used in early production sets only. New parts may be used in early or late production sets. Use original parts where possible, then stock new parts.
X	Original New	Early (before change) Late (after change)	New parts only may be used in early or late production sets. Stock new parts.
Y	Original New	Early (before change) Late (after change)	Original parts may be used in early production sets only. New parts may be used in late production sets only. Stock both original and new parts.
Z	Other		

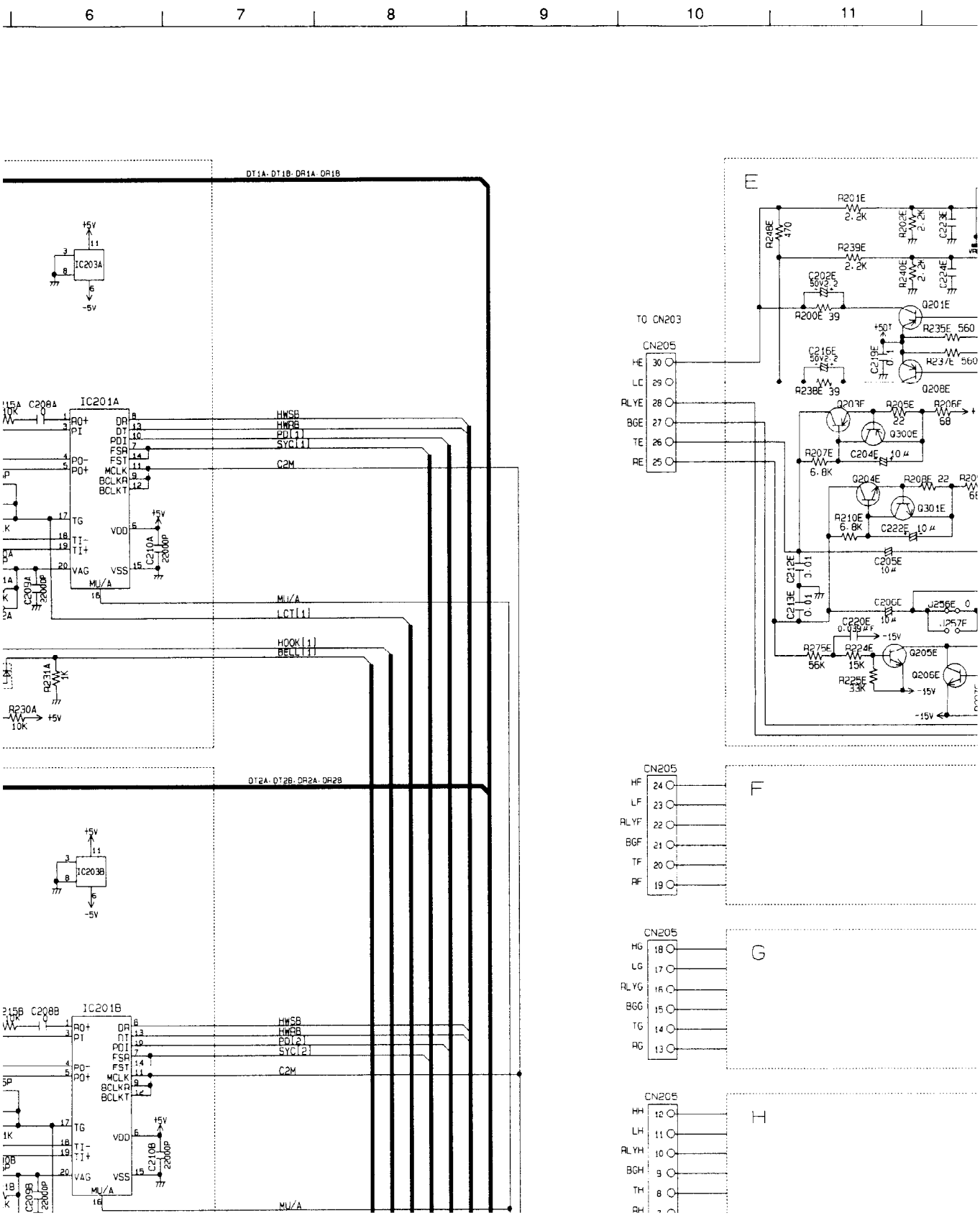
Ref. No.	Part No.		Part Name & Description	Pcs	Remarks	Notes		Time of change (Suffix)
	Original Part	**New Part**						
CABINET & ELECTRICAL PARTS								
58	PQGT10519Z	**PQGT10519Y**	NAME PLATE	1		1	Y	G
MAIN BOARD PARTS								
IC201A-H	PQVIMC45503W	**PSVIMC14548V**	IC	8		1	X	H
IC202A-H	PQVINJM4558M	----------	IC	0		6		H
IC213	PQVIMT8952BE	**PSVIMT8952BP**	IC	1		1	Y	G
IC226	----------	**PQVISN7L02ML**	IC	1		5		G
IC227	----------	**PQVISN7L74S**	IC	1		5		G
Q300A-H	----------	**2SA1576Q**	TRANSISTOR (SI)	8		5		G
Q301A-H	----------	**2SC4081Q**	TRANSISTOR (SI)	8		5		G
D204A-H	RLS71	----------	DIODE (SI)	0		6		G
D205A-H	RLS71	----------	DIODE (SI)	0		6		G
D206A-H	RLS71	----------	DIODE (SI)	0		6		G
D207A-H	RLS71	----------	DIODE (SI)	0		6		G
R212A-H	PQ4R10XF2940	**PQ4R10XF2401**	RESISTOR, 2.4kΩ	8		1	X	H
R214A-H	PQ4R10XF7502	**PQ4R10XF8202**	RESISTOR, 82kΩ	8		1	X	H
R215A-H	PQ4R10XF1003	**PQ4R10XF1103**	RESISTOR, 110kΩ	8		1	X	H
R216A-H	PQ4R10XJ393	**PQ4R10XF1003**	RESISTOR, 100kΩ	8		1	X	H
R217A-H	PQ4R10XJ393	**PQ4R10XF1003**	RESISTOR, 100kΩ	8		1	X	H
R218A-H	PQ4R10XF1003	----------	RESISTOR, 100kΩ	0		6		H
R219A-H	PQ4R10XF1003	**PQ4R10XF1103**	RESISTOR, 110kΩ	8		1	X	H
R220A-H	PQ4R10XF1003	**PQ4R10XF1103**	RESISTOR, 110kΩ	8		1	X	H
R221A-H	PQ4R10XF1003	**PQ4R10XF9102**	RESISTOR, 91kΩ	8		1	X	H
R223A-H	PQ4R10XF7502	----------	RESISTOR, 75kΩ	0		6		H
R231A-H	----------	**PQ4R10XJ102**	RESISTOR, 1kΩ	8		5		G

Reason for Change
Interchangeability Code

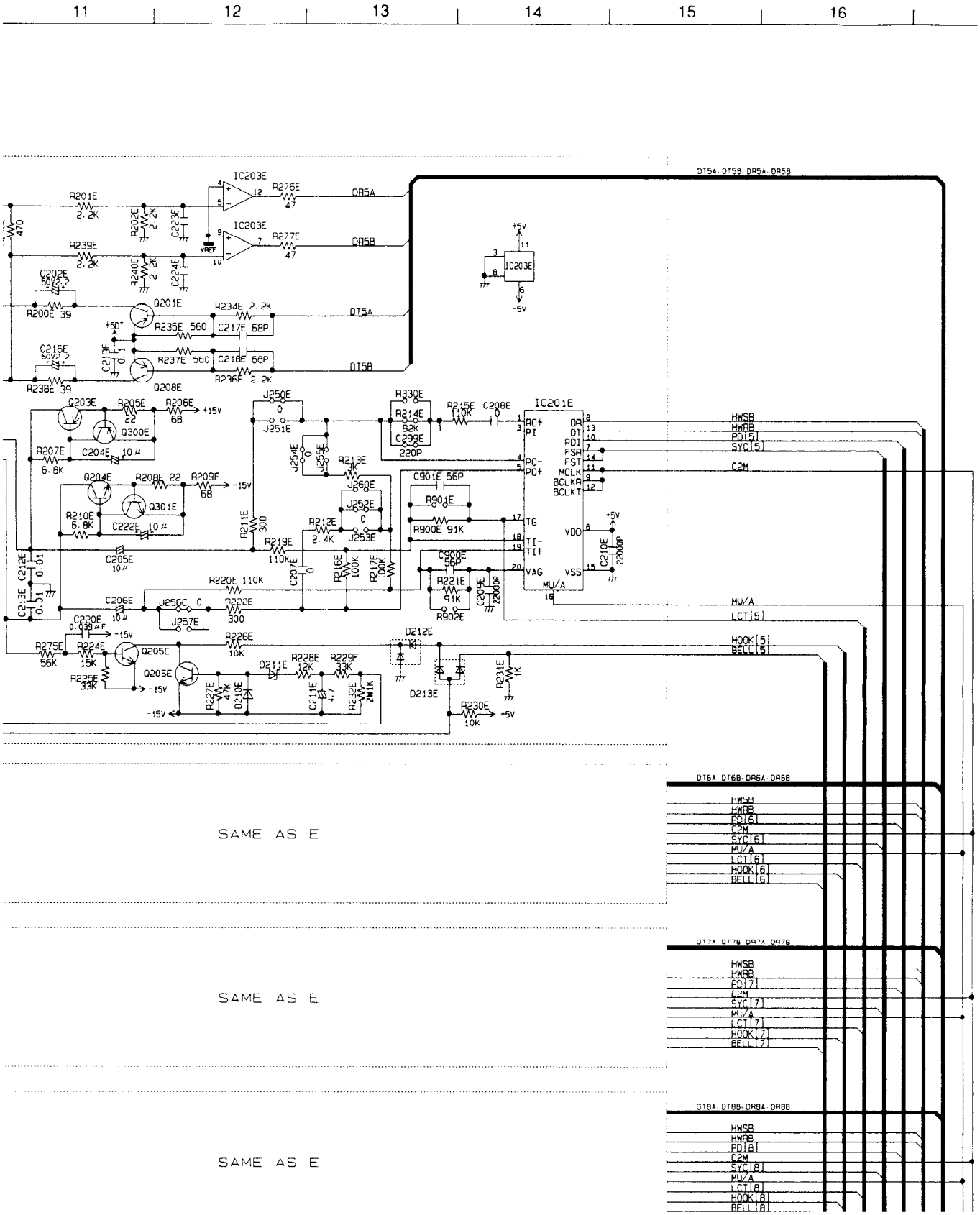
Continue page 6.

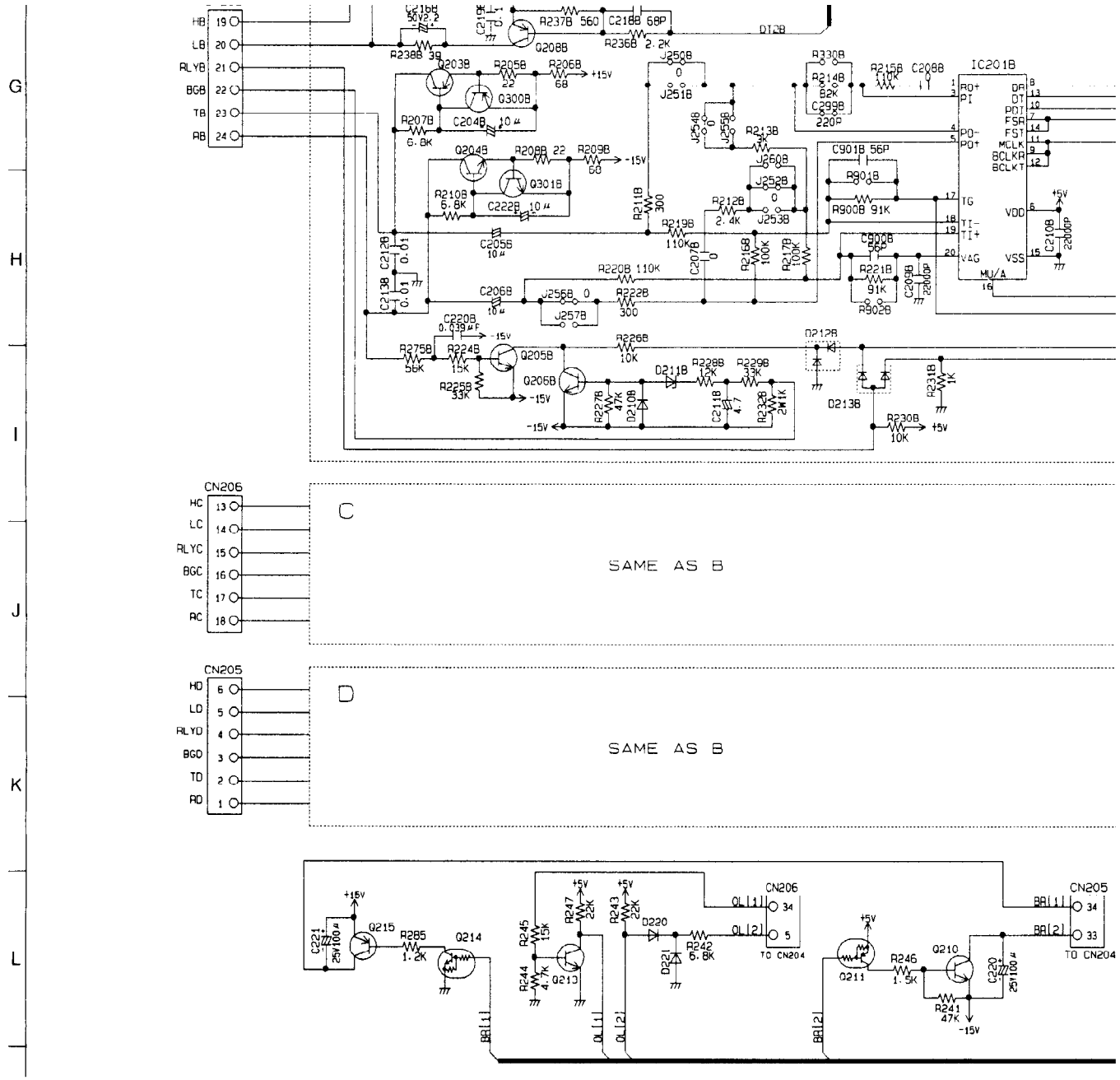

1
2
3
4
5
6
A
B
C
D
E
F
G
H
TO CN204
CN206
A
B
IC203A
IC203B
IC201A
IC201B
Q201A
Q201B
Q203A
Q203B
Q204A
Q204B
Q205A
Q205B
Q206A
Q206B
Q208A
Q208B
Q300A
Q300B
Q301A
Q301B
D211A
D212A
D213A
DR1A
DR1B
DR2A
DR2B
DI1A
DI1B
DI2A
DI2B
+5V
-5V
+15V
-15V
VREF
VDD
VSS
VAG
TG
MU/A
MCLK
BCLKR
BCLKT
FG
HA
LA
RLYA
BGA
TA
RA
HB
LB
RLYB
BGB
TB
RB

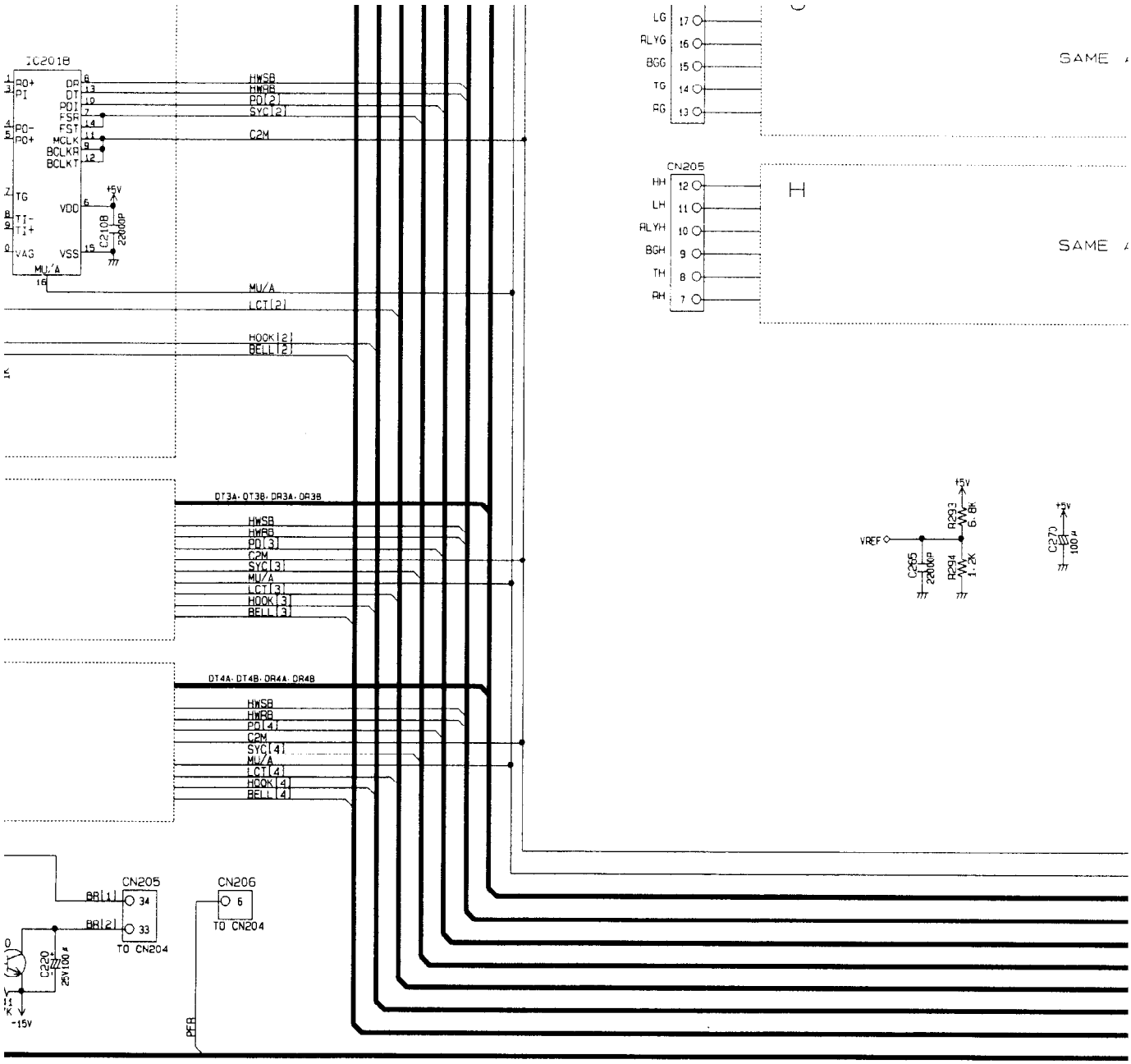
SCHEMATIC DIAGRAM (MAIN CIRCUIT) .....Change from original pages 16 ~ 18.



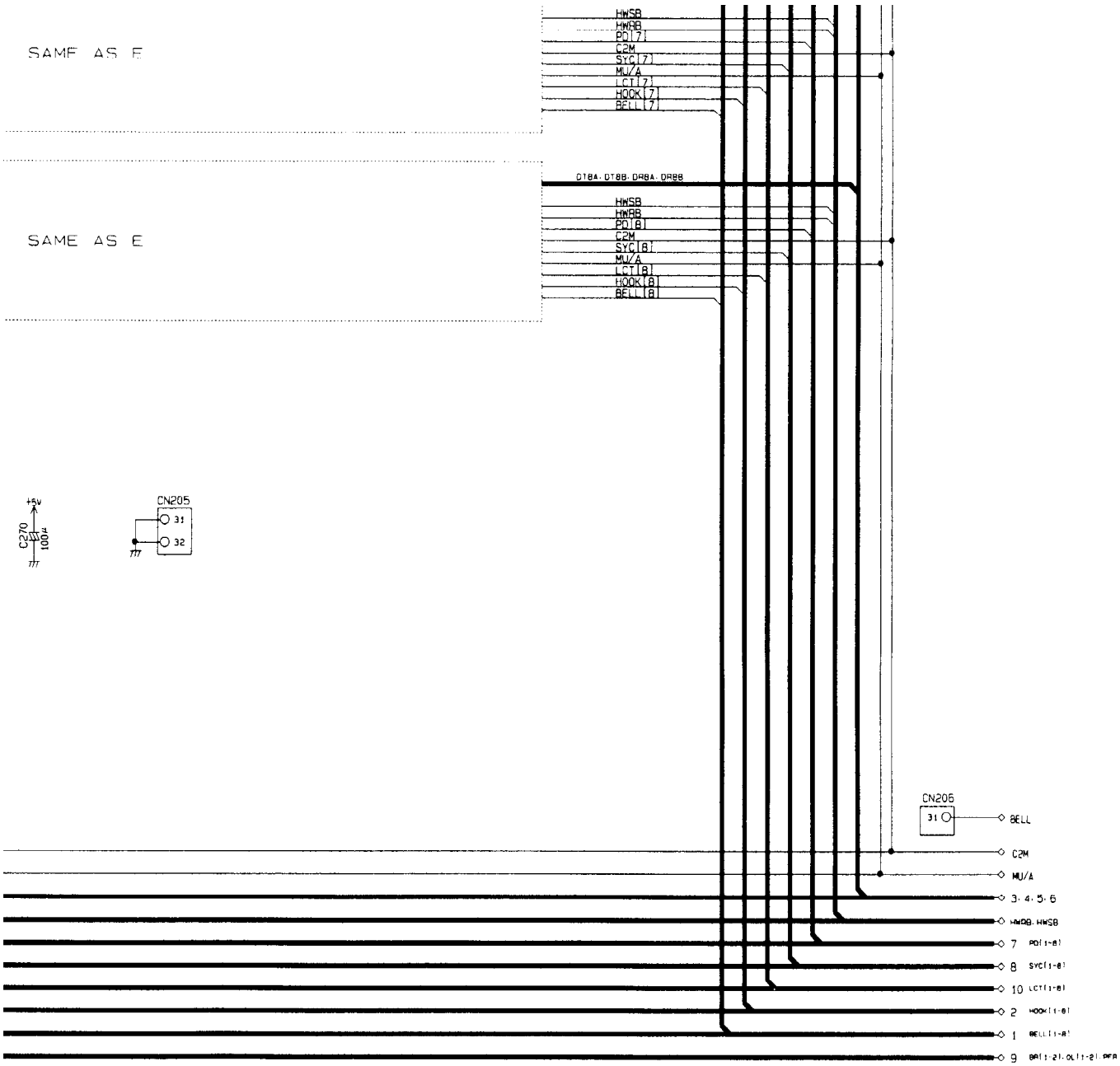
jinal pages 16 ~ 18.




HB 19
LB 20
RLYB 21
BGB 22
TB 23
AB 24
Q208B
R237B 560
C218B 68P
R236B 2.2K
DT2B
R238B 39
Q203B
R205B 22
R206B 68
+15V
Q300B
R207B 6.8K
C204B 10μ
Q204B
R208B 22
R209B 68
-15V
Q301B
R210B 6.8K
C222B 10μ
C205B 10μ
C212B 0.01
C213B 0.01
J256B
J251B
J254B
J255B
R213B
J260B
J252B
J253B
R212B 2.4K
R211B 300
R219B 110K
C207B
R216B 100K
R217B 100K
R330B
R214B 82K
C209B 220P
R215B 110K
C208B
IC201B
RO+
PI
PO-
PO+
TG
TI-
TI+
VAG
DR
DT
PDT
FSR
FST
MCLK
BCLKR
BCLKT
VDD
VSS
MU/A
C901B 56P
R901B
R900B 91K
C202B 56P
R221B 91K
R902B
C209B 2200P
C210B 2200P
+5V
R220B 110K
C206B 10μ
J256B 0
J257B
R222B 300
C220B 0.039μF
R275B 56K
R224B 15K
R225B 33K
Q205B
Q206B
R226B 10K
D211B
R228B 12K
R229B 33K
R227B 47K
D210B
C211B 4.7
R233B 2W1K
D212B
D213B
R231B 1K
R230B 10K
CN206
HC 13
LC 14
RLYC 15
BGC 16
TC 17
AC 18
C
SAME AS B
CN205
HD 6
LD 5
RLYD 4
BGD 3
TD 2
AD 1
D
SAME AS B
C221 25V100μ
Q215
R285 1.2K
Q214
R245 15K
R247 22K
R243 22K
R244 4.7K
Q213
D220
D221
R242 6.8K
OL[1]
OL[2]
CN206
34
5
TO CN204
BA[1]
BA[2]
Q211
R246 1.5K
Q210
R241 47K
C220 25V100μ
CN205
34
33
TO CN204



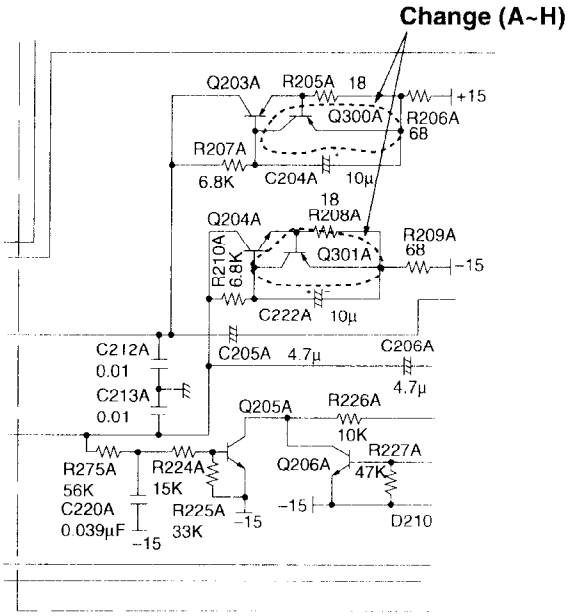
(Supplement–3)


SAME AS E
SAME AS E
HWSB
HWAB
PD[7]
C2M
SYC[7]
MU/A
LCT[7]
HOOK[7]
BELL[7]
DT8A, DT8B, DR8A, DR8B
HWSB
HWAB
PD[8]
C2M
SYC[8]
MU/A
LCT[8]
HOOK[8]
BELL[8]
+5V
C270
100μ
CN205
31
32
CN206
31
BELL
C2M
MU/A
3, 4, 5, 6
HWDB, HWSB
7
8
10
2
1
9

ment–3)

■ SCHEMATIC DIAGRAM (MAIN) ..... Change from original paeges 16 and 17.

● Section C-D/3-5



Ref. No.	Part No.		Part Name & Description	Pcs	Remarks	Notes		Time of change (Suffix)
	Original Part	**New Part**						
R263	PQ4R10XJ102	**PQ4R10XJ152**	RESISTOR, 1.5kΩ	1		1	Y	G
R264	PQ4R10XJ102	**PQ4R10XJ152**	RESISTOR, 1.5kΩ	1		1	Y	G
R286	PQ4R10XJ102	**PQ4R10XJ152**	RESISTOR, 1.5kΩ	1		1	Y	G
R296A-H	PQ4R10XJ220	----------	RESISTOR, 22Ω	0		6		H
R297A-H	PQ4R10XJ220	----------	RESISTOR, 22Ω	0		6		H
R400	----------	**PQ4R10XJ152**	RESISTOR, 1.5kΩ	1		5		G
R900A-H	----------	**PQ4R10XF9102**	RESISTOR, 91kΩ	8		1	X	H
C207A-H	ECEA1HKS4R7	**PQ4R10XJ000**	RESISTOR, 0Ω	8		1	X	H
C208A-H	ECUV1H104MD	**PQ4R10XJ000**	RESISTOR, 0Ω	8		1	X	H
C215A-H	PQCUV1H121JC	----------	RESISTOR, 120pF	0		6		H
C299A-H	----------	**PQCUV1H221JC**	CAPACITOR, 220µF					H
C300, 301	----------	**PQCUV1H223KB**	CAPACITOR, 0.022µF	2		5		G
C900A-H	----------	**PQCUV1H560JC**	CAPACITOR, 56pF	8		5		H
C901A-H		**PQCUV1H560JC**	CAPACITOR, 56pF	8		5		H

Reason for Change
Interchangeability Code

ORDER NO. KMS0006509C1

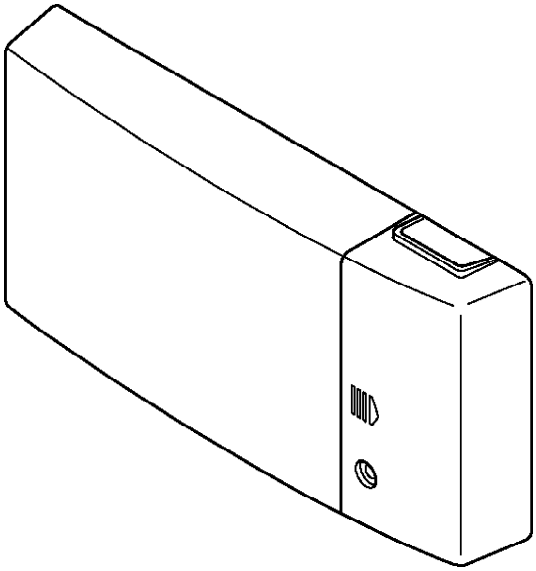
F5

Service Manual

1 T1 LINE EXPANSION UNIT

KX-TD187C

(for Canada)



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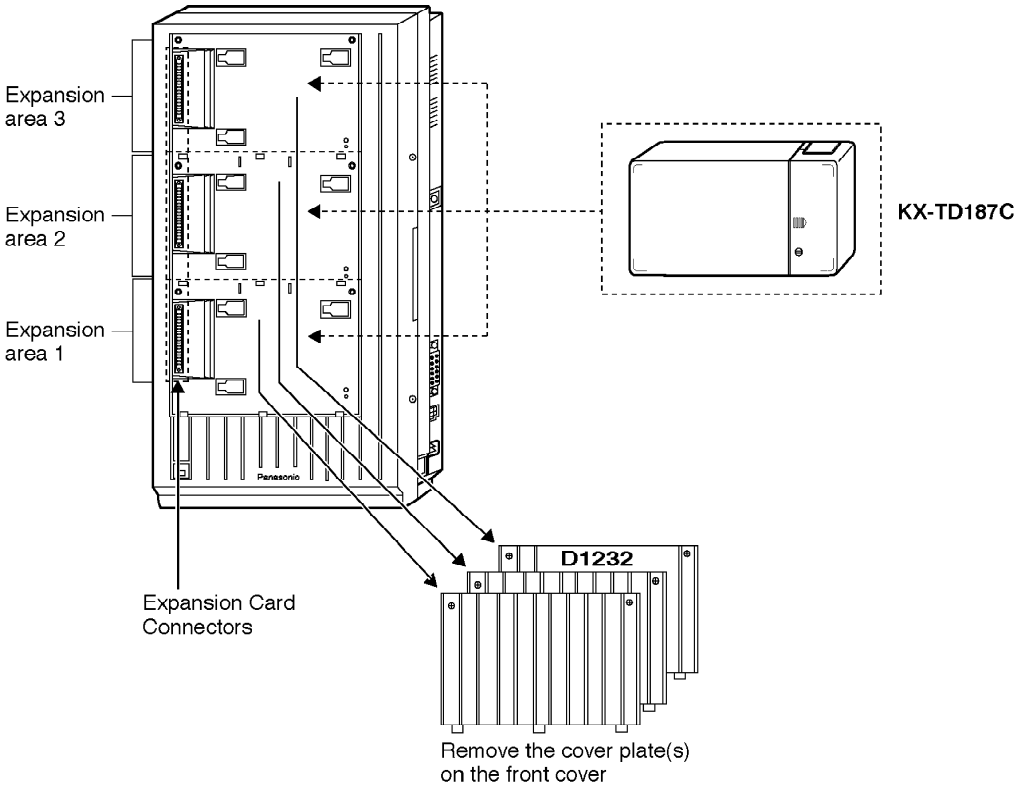
1. LOCATION OF THE UNIT

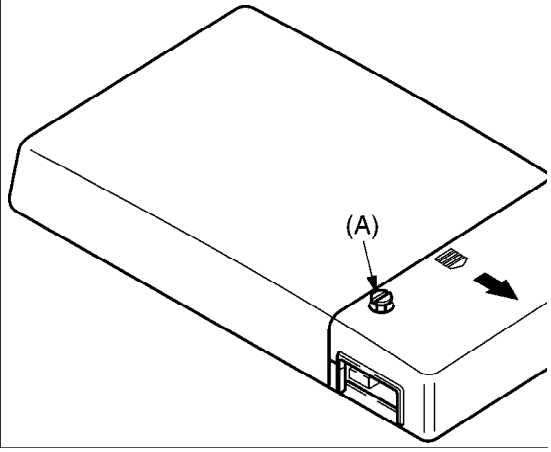
The location of the optional unit shown below. / One T1 Line Expansion unit can be installed to any expansion area on the main unit, KX-TD1232C only.



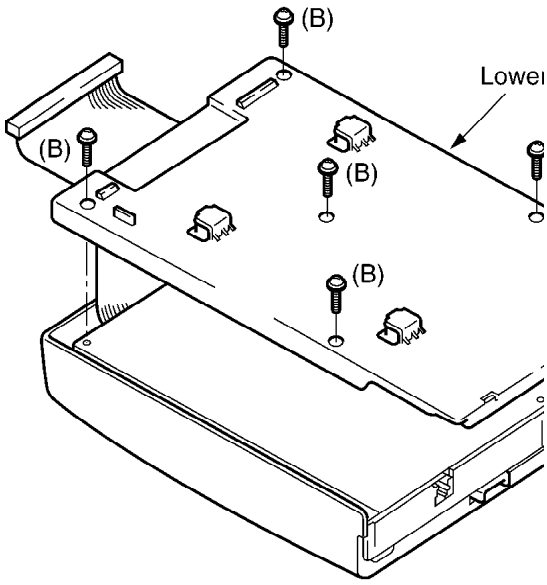
Notes:
System Programming is required for card location identification. For details, refer to the Installation Manual.

2. DISASSEMBLY INSTRUCTIONS

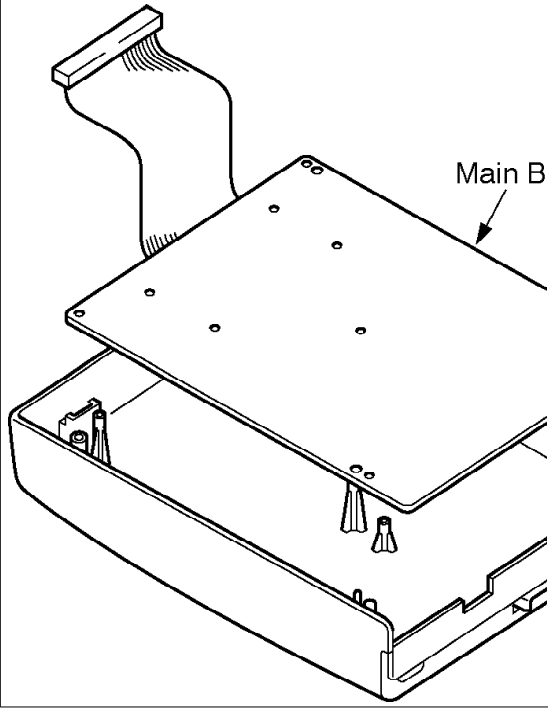
2.1. HOW TO REMOVE THE COVER / (Procedure 2.1.)

(1) Loosen the screw (A). / (2) Slide the cover in the direction of the arrow.	

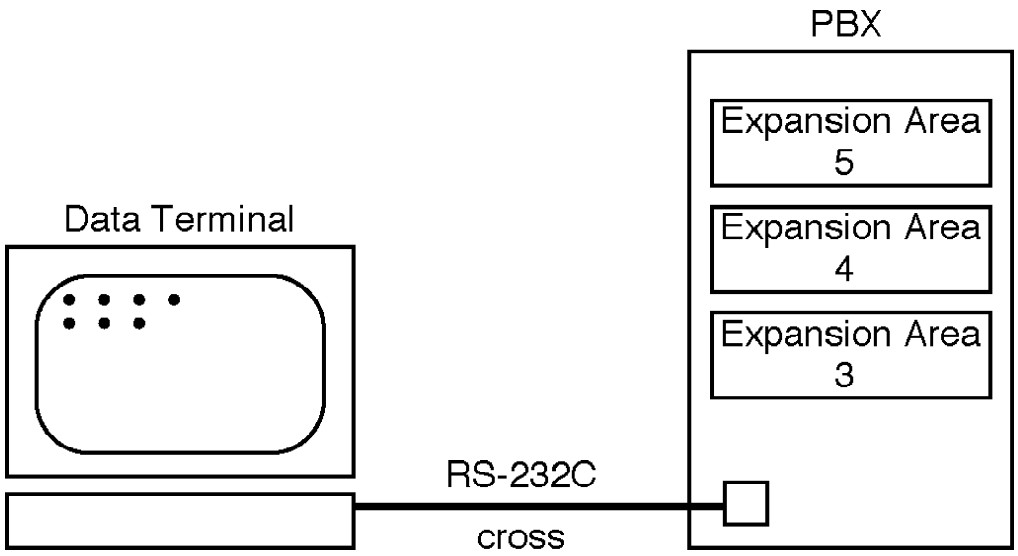
2.2. HOW TO REMOVE THE LOWER CABINET / (Procedure 2.1. → 2.2.)

(1) Remove the 5 screws (B). / (2) Remove the lower cabinet.	

2.3. HOW TO REMOVE THE MAIN BOARD / (Procedure 2.1 → 2.2. → 2.3.)

(1) Remove the main board.	

3. DIAGNOSTIC METHOD



3.1. HOW TO GET INTO SELF-DIAGNOSTIC MODE

1. **Set the main power switch to ON. (PBX and Data Terminal)**
2. **Connect the Data Terminal to the RS-232C of PBX and press the return key of the Data Terminal in 10 seconds.**
3. **After message is displayed, enter password.**

Ex.)

```
Welcome to KX-TD1232 Ver. 2.0
Panasonic CO.,LTD / Enter Password /
?????? ↓
```

4. **After response message is received, enter diagnostic mode shift command "DAG".**

Ex.)

```
EIA Mode Start / DAG ↓
```

5. **After response message is received, diagnostic command can be used.**

Ex.)

```
DIAG Mode Start
```

***Setting of RS-232C communication parameter**

Return Cord:	**CL+LF**
Borate:	**9600bps**
Data:	**8 bit**
Parity Bit:	**None**
Stop Bit:	**1 bit**

3.2. HOW TO PERFORM SELF-DIAGNOSTIC MODE

1. **After entering self-diagnostic mode, enter Card Information command “XS P1“ (P1=Expansion Area number) and check response “OK 1, 0, 00, 00, 00, 00, xxxx, xxxx, xxxxxxxxxxxxxxxx“. / x=don’t care**
2. **Enter PBG/PBR command “XW P1“ (P1=Expansion Area number) and check response “OK 00, 00, 0“.**
3. **Enter Loopback command “XU P1, 00“ (P1=Expansion Area number) and check response ”OK 00”. / If not, please refer to 5. TROUBLE SHOOTING GUIDE.**

4. CIRCUIT OPERATION

4.1. FUNCTION

(1) T-1 interface	**Converts T-1 bipolar signals to PCM format signals, and PCM format sig -1 bipolar signals.**
(2) DTMF transmission	**Sends DTMF signals to the T-1 line.**
(3) DTMF detection	**Detects DTMF signals from the T-1 line.**
(4) Gain control	**Distributes the gain due to the T-1 line.**
(5) Synchronization control	**Generates the system clock from the T-1 line, and the send clock to the**

4.2. CPU AND TSW INTERFACE CIRCUIT

(1) Composition
The CPU and TSW interface circuit is composed of comparators (IC41), buffers (IC20, IC21,IC32,IC33), FIFO and decoder (IC1).

(2) Circuit Operation
The PCM clock is input to the decoder (IC1) through the buffer (IC32) and distributed to all CODECS. / The control data is written in FIFO by the CPU control signal and read by this card’s CPU (IC3). When FIFO is empty, the CPU (IC3) writes the data to send to the CPU card. / FIFO is 64 bytes size. When this card installs in the free slot, and turn on power switch, this card keeps

reset status until cancelling reset status by CPU. / LED of this card (LED5) for reset status.

4.3. CONTROL CIRCUIT

(1) Composition
The control circuits is composed of a CPU (IC3), gate array (IC2), flash memory (IC6, IC17), and SRAM (IC18, IC19).

(2) Circuit Operation
When the CPU reset status is cancelled, the CPU executes an initial operation which sets the parallel I/O, internal timers, etc. / After the initial operation, the CPU controls the line circuits following the CPU card's instructions.

4.4. T-1 LINE CIRCUIT

(1) Composition
This circuit is composed of the T-1 Framer (IC4).

(2) Circuit Operation
The T-1 framer has the following functions. / D4 (SF) and ESF framing. / Insertion and detection A, B, C, D bits. / B8ZS zero code suppression. / Loss of signal indication. / Yellow and blue alarm signal capabilities. / The T-1 framer converts T-1 bipolar signals to PCM format signals, and PCM format signals to T-1 bipolar signals. / Included PLL circuit.

4.5. TSW CIRCUIT

(1) Composition
This circuit is composed of the TSW (IC5).

(2) Circuit Operation
The TSW has the following functions. / 32 channel dual tone generator, including 16 standard DTMF tones and tone ringer. / Programmable per channel gain control from +3 to -27dB, increments of 1dB for output channels. / Supports both A-law or u-law operation.

4.6. CODEC and DTMF RECEIVER CIRCUIT

(1) Composition
This circuit is composed of the CODEC and DTMF receiver (IC8, IC9, IC10, IC11, IC12, IC13, IC14, IC15), parallel / serial converter (IC25, IC26) and buffer (IC27, IC28).

(2) Circuit Operation

The CODEC and DTMF receiver has the following functions. / Dual PCM CODEC and Filtering systems. / Dual DTMF Receiver. / Operational Amplifier for Gain Adjustment. / A-law / u-law Register Selectable. / Power Down Mode.
The CODEC and DTMF receiver is set up by CPU through the parallel / serial converter (IC25, IC26). / When the CODEC and DTMF receiver detects the tone, the DTMF receiver indicates the tone to the CPU through the buffer (IC27, IC28). / After the CPU read the detecting result from parallel I/F of DTMF receiver.

4.7. CPLD CIRCUIT

(1) Composition
This circuit is composed of the CPLD (IC7) and buffer (IC36, IC37).

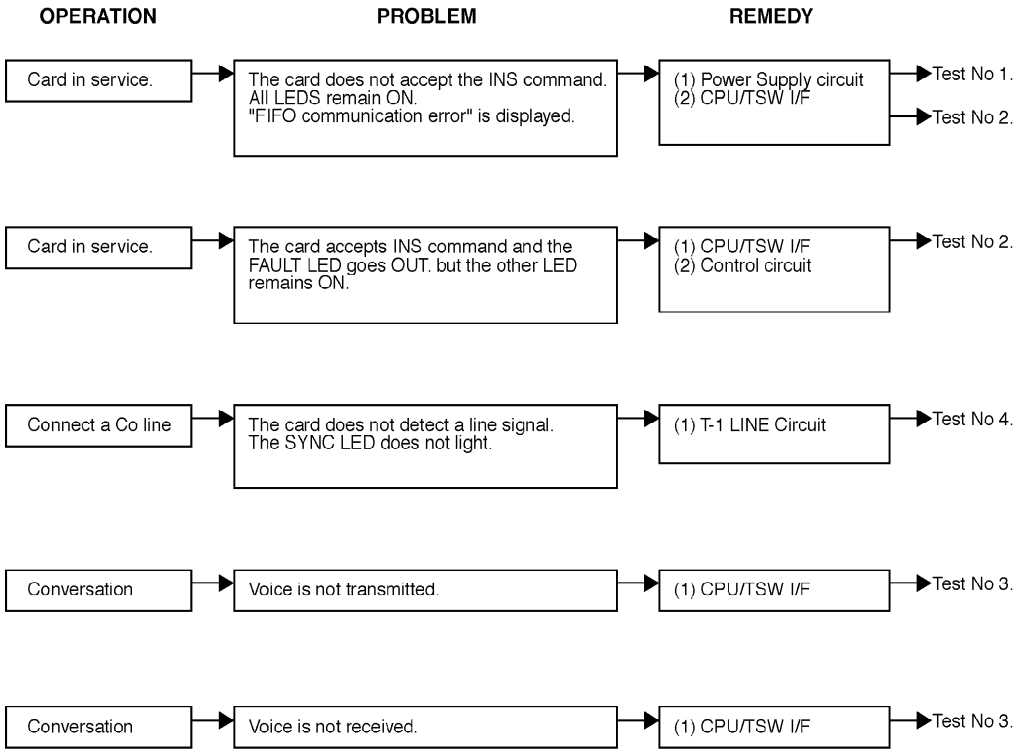
(2) Circuit Operation
The TSW has the following functions. / PCM H/W control. / MCLK control. / DTMF receiver time slot control.

4.8. DC-DC CONVERTER CIRCUIT

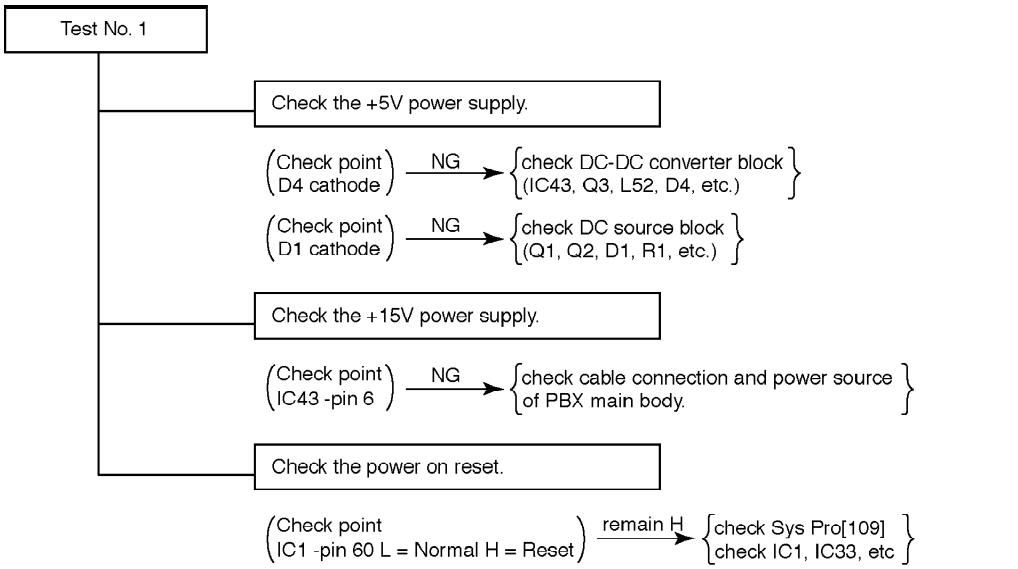
(1) Composition
This circuit is composed of the DC-DC converter (IC43) and transistor (Q3), coil (L52) and diode (D3).

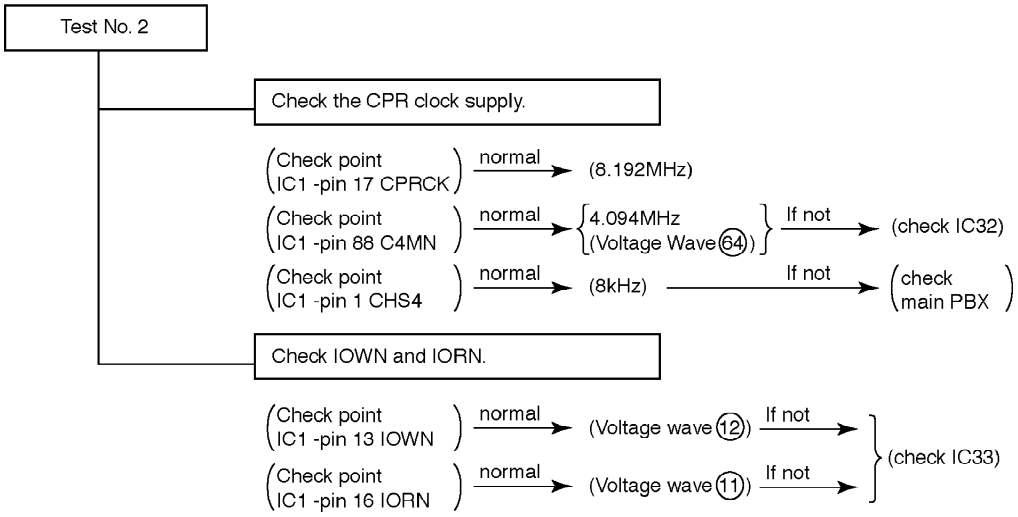
(2) Circuit Operation
This circuit step down from DC+15V to DC+5V.

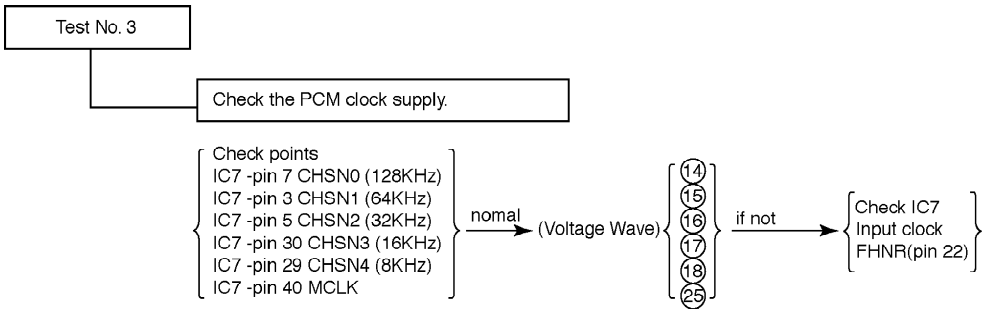
5. TROUBLE SHOOTING GUIDE

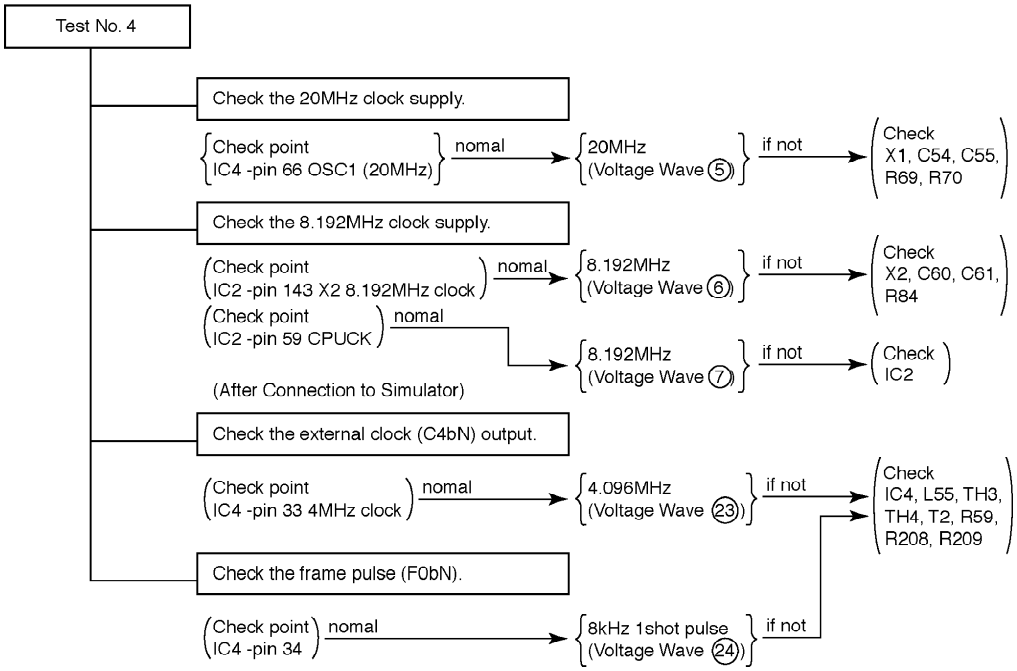


***Description of LED**
LED1 Sync Indication (Light ON = Sync)
LED2 AIS Indication (Light ON = AIS detect)
LED3 RAI Indication (Light ON = RAI detect)
LED4 OUS Indication (Light ON = Out of Sync)
ALL LED's Light ON = Hardware Reset Activated
ALL LED's Light OFF = Ready (Not synchronized after reset deactivated)


Test No. 1
Check the +5V power supply.
Check point
D4 cathode
NG
check DC-DC converter block
(IC43, Q3, L52, D4, etc.)
Check point
D1 cathode
NG
check DC source block
(Q1, Q2, D1, R1, etc.)
Check the +15V power supply.
Check point
IC43 -pin 6
NG
check cable connection and power source
of PBX main body.
Check the power on reset.
Check point
IC1 -pin 60 L = Normal H = Reset
remain H
check Sys Pro[109]
check IC1, IC33, etc


Test No. 2
Check the CPR clock supply.
Check point
IC1 -pin 17 CPRCK
normal
(8.192MHz)
Check point
IC1 -pin 88 C4MN
normal
4.094MHz
(Voltage Wave 64)
If not
(check IC32)
Check point
IC1 -pin 1 CHS4
normal
(8kHz)
If not
check
main PBX
Check IOWN and IORN.
Check point
IC1 -pin 13 IOWN
normal
(Voltage wave 12)
If not
Check point
IC1 -pin 16 IORN
normal
(Voltage wave 11)
If not
(check IC33)





6. HOW TO REPLACE THE FLAT PACKAGE IC

If you do not have the special tools (for example: SPOT HEATER) to remove the SPOT HEATER'S Flat IC, If you have solder (large amount) a soldering iron and a cutter knife, you can easily remove IC's even though large than 100 pins.

6.1. PREPARATION

- SOLDER / Sparkle Solder 115A-1, 115B-1 or Almit Solder KR-19, KR -19RMA

- Soldering iron / Recommended power consumption is between 30 W to 40 W. / Temperature of Copper Rod 662 ± 50°F (350 ± 10°C) / (An expert may handle a 60~80 W iron, but beginner might damage foil by overheating.)

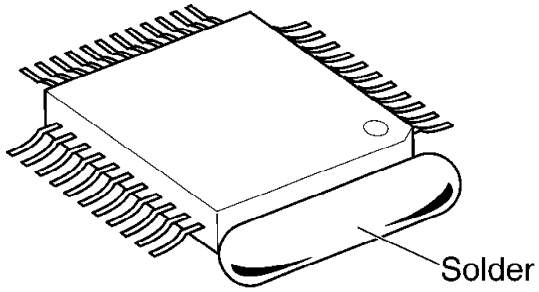
- Flux / HI115 Specific gravity 0.863 / (Original flux should be

replaced daily.)

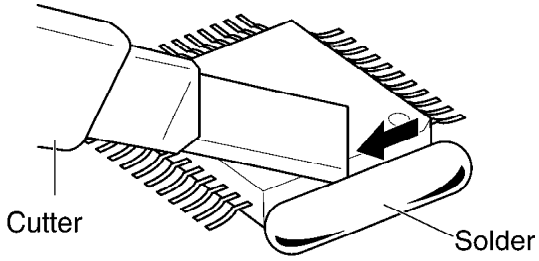
6.2. FLAT PACKAGE IC REMOVE PROCEDURE

1. When all of the IC lead can not be seen at the standard degree, fill with large quantities of solder.

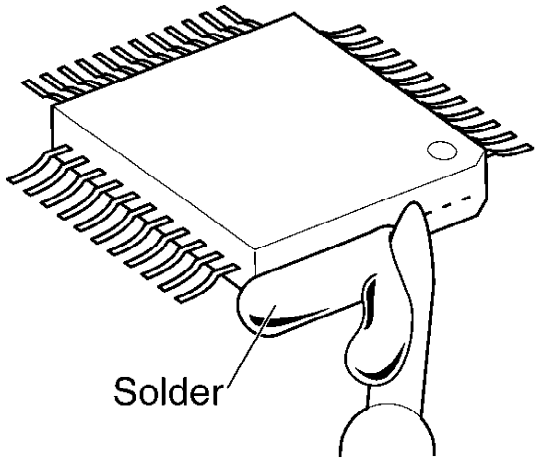
Note:
If you do not fill with solder and directly cut the IC lead with the cutter, stress may build up directly in the P.C.board's pattern. If you do not fill with large quantities of solder as in step 1 the P.C.board pattem may have to be removed.



2. Using a cutter, cut the lead at the source. (Cut the contents with the cutter lightly 5 or 6 times.)



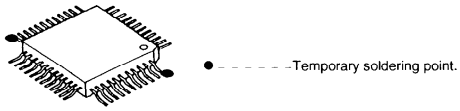
3. Remove when the solder melts. (Remove the lead at the same time.)



After removing the Flat IC and when attaching the new IC, remove any of the excess solder on the land using the soldering wire, etc. If the excess solder is not removed from the land, the IC will slip and not be attached properly.

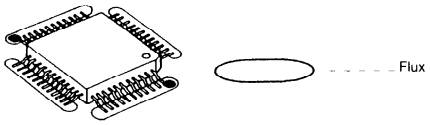
6.3. FLAT PACKAGE IC INSTALLATION PROCEDURE

1. Temporary fix FLAT PACKAGE IC by soldering on two marked pins.

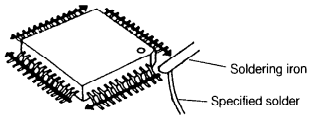


***Check the accuracy of the IC setting with the corresponding soldering foil.**

2. Apply flux for all pins of FLAT PACKAGE IC.



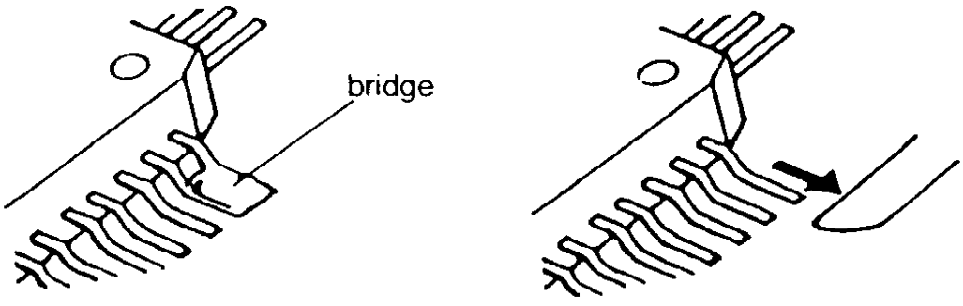
3. Solder using the specified solder, in the direction of the arrow, by sliding the soldering iron.



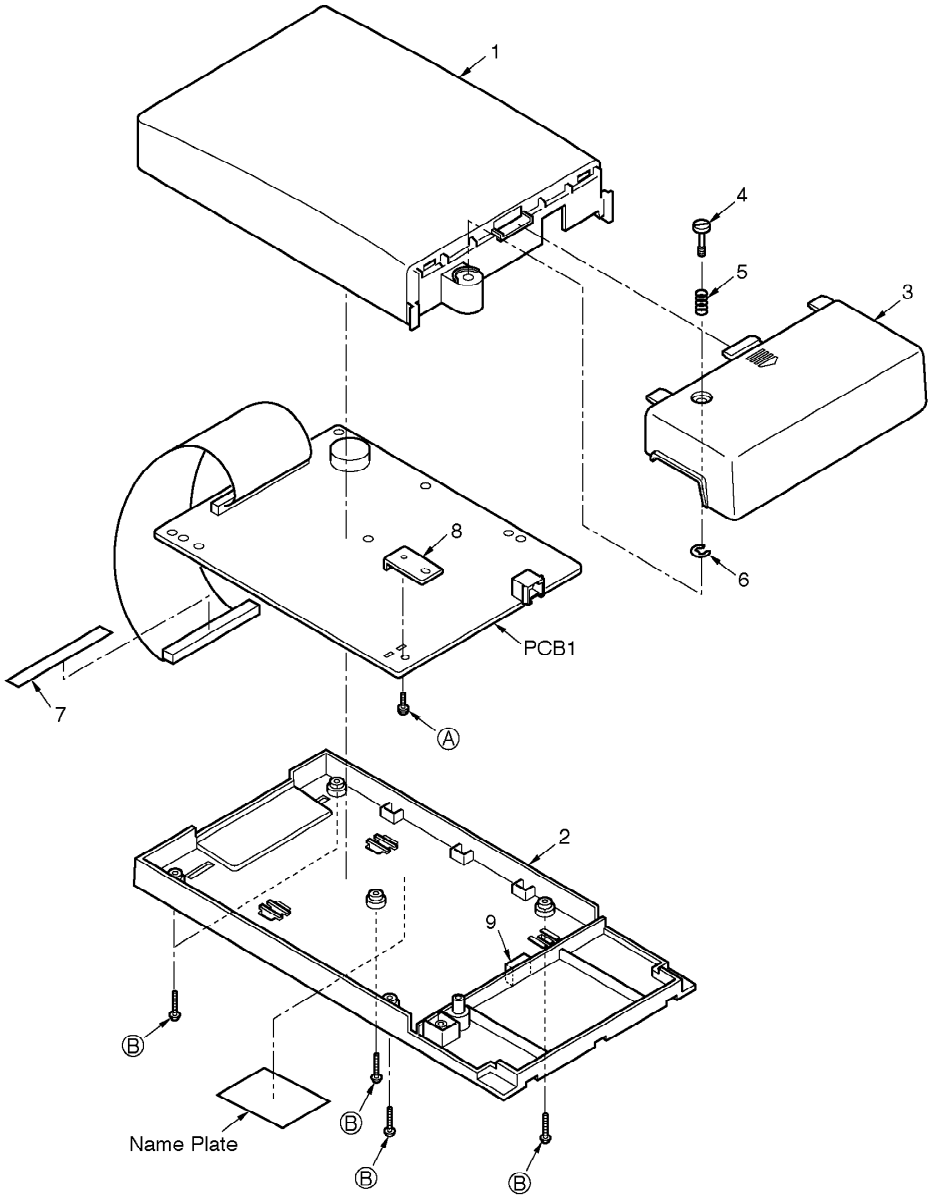
6.4. BRIDGE MODIFICATION PROCEDURE

1. Lightly re-solder the bridged portion.

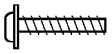
2. Remove the remaining solder along pins using a soldering iron as shown in the figure below.



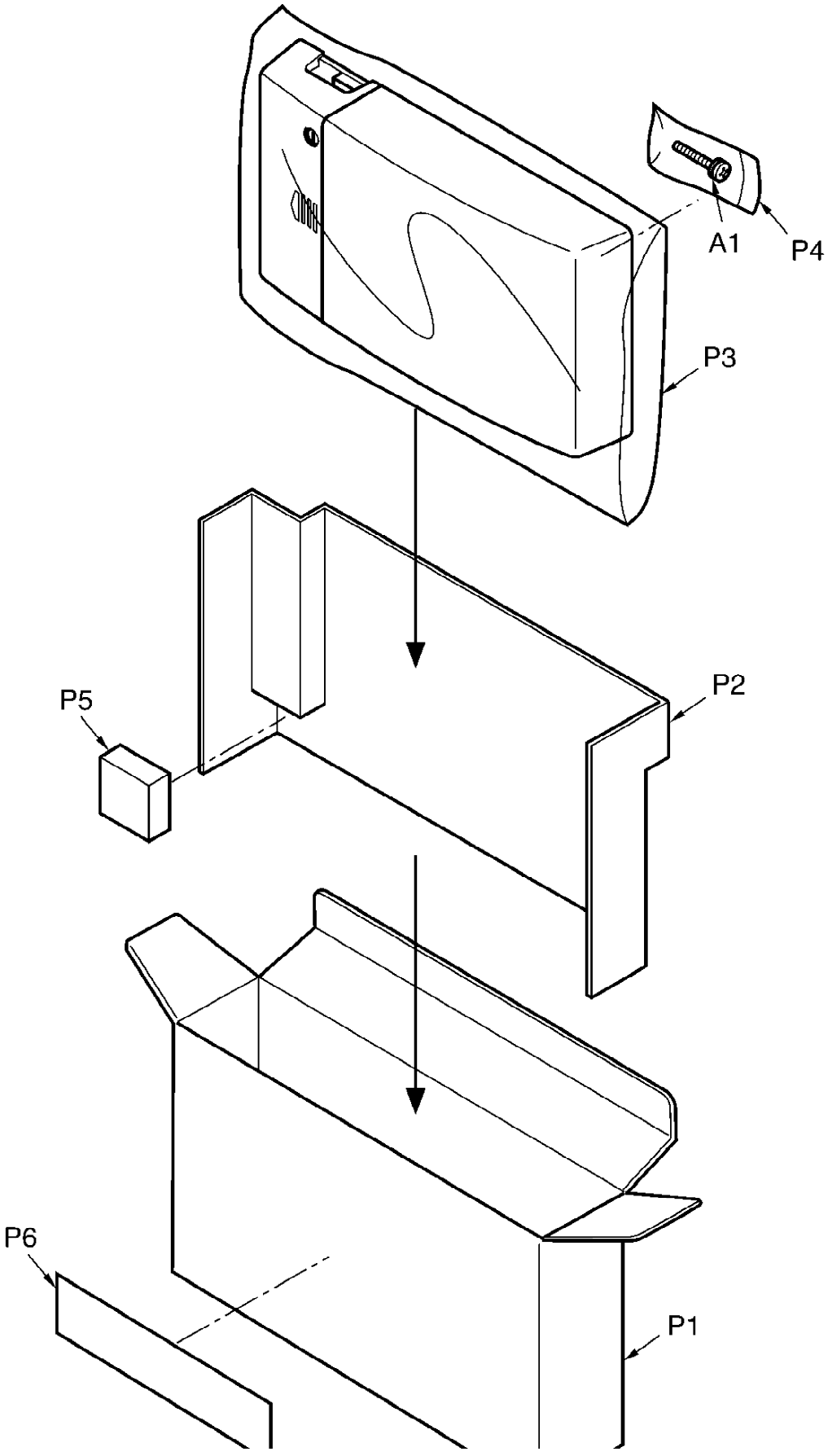
7. CABINET AND ELECTRICAL PARTS LOCATION



ACTUAL SIZE OF SCREWS

Ref. No.	Figure	Part No
Ⓐ		XYN3+C6
Ⓑ		XTW3+S14P

8. ACCESSORIES AND PACKING MATERIALS


A1
P4
P3
P5
P2
P6
P1

9. REPLACEMENT PARTS LIST

Model KX-TD187C

Note:

1. **RTL (Retention Time Limited)**
   The marking (RTL) indicates that the Retention Time is limited for this item.
   After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability depends on the type of assembly and the laws governing parts and product retention. At the end of this period, the assembly will no longer be available.
2. **Important safety notice / Components identified by the ⚠ mark indicates special characteristics important for safety. When replacing any of these components, only use specified manufacture's parts.**
3. **The S mark indicates service standard parts and may differ from production parts.**
4. **RESISTORS & CAPACITORS / Unless otherwise specified; / All resistors are in ohms (Ω) K=1000 Ω , M=1000k Ω / All capacitors are in MICRO FARADS (μ F) P= μ μ F / *Type & Wattage of Resistor**

Type

ERC:Solid ERD:Carbon PQRD:Carbon	ERX:Metal Film ERG:Metal Oxide ER0:Metal Film	PQ4R:Carbon ERS:Fusible Resistor ERF:Cement Resistor

Wattege

10,16:1/8W	14,25:1/4W	12:1/2W	1:1W	2:2W	3:3W

*Type & Voltage of Capacitor

Type

ECFD:Semi-Conductor ECQS:Styrol PQCUV:Chip ECQMS:Mica	ECCD,ECKD,ECBT,PQCBC:Ceramic ECQE,ECQV,ECQG:Polyester ECEA,ECSZ:Electlytic ECQP:Polypropylene

Voltage

ECQ Type	ECQG ECQV Type	ECSZ Type	Others	
1H:50V 2A:100V 2E:250V 2H:500V	05:50V 1:100V 2:200V	0F:3.15V 1A:10V 1V:35V 0J:6.3V	0J :6.3V 1A :10V 1C :16V 1E,25:25V	1V :35V 50,1H:50V 1J :63V 2A :100V

9.1. CABINET AND ELECTRICAL PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
1	PQKF10185P1	UPPER CABINET	S
2	PQKM10244B1	LOWER CABINET	S
3	PQKV10007Z1	COVER	S
4	PQHD10011Z	SCREW	
5	PQUS141Z	SPRING	
6	XUC3VW	RETAINING RING	
7	PQHX10426Z	COVER	
8	PQMC10038Z	MAGNETIC SHIELD	
9	PSHG1206Z	RUBBER PARTS	

9.2. ACCESSORIES AND PACKING MATERIALS

Ref. No.	Part No.	Part Name & Description	Remarks
A1	XYN4+C35FN	SCREW WITH WASHER	
P1	PQPK10118Z	GIFT BOX	
P2	PQPD10027Z	CUSHION	
P3	PQPP10047Z	PROTECTION COVER (FOR SET)	
P4	XZB05X08A03	PROTECTION COVER / (FOR ACCESSORY)	
P5	PSHG1167Z	SPACER	
P6	PSQA2164Z	LABEL	

9.3. MAIN BOARD PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
PCB1	PSWPTD187C	MAIN BOARD ASS`Y(RTL)	⚠
		(ICS)	
IC1	PSVIT16G1230	IC	
IC2	PQVI620890F	IC	
IC3	PQVI68301FCG	IC	
IC4	PSVIMT9074AL	IC	
IC5	PSVIMT90812A	IC	
IC7	PSVIXC9536RV	IC	
IC8	PSVIAK2305	IC	
IC9	PSVIAK2305	IC	
IC10	PSVIAK2305	IC	
IC11	PSVIAK2305	IC	
IC12	PSVIAK2305	IC	
IC13	PSVIAK2305	IC	
IC14	PSVIAK2305	IC	
IC15	PSVIAK2305	IC	
IC16	PSWITD187C	IC	
IC18	PSVICX581BMD	IC	S
IC19	PSVICX581BMD	IC	S
IC20	PQVISN7L138M	IC	
IC21	PQVISN7L640M	IC	
IC25	PSVISN7H165N	IC	
IC26	PSVISN7H165N	IC	
IC27	PQVIPD7H245G	IC	S

Ref. No.	Part No.	Part Name & Description	Remarks
IC28	PQVIPD7H245G	IC	S
IC29	PQVISN7L138M	IC	
IC30	PQVISN7L138M	IC	
IC32	PQVISN7L04S	IC	S
IC33	PQVISN7L04S	IC	S
IC34	PQVISN7L04S	IC	S
IC35	PQVISN7L04S	IC	S
IC36	PQVISN7L125S	IC	S
IC37	PQVISN7L125S	IC	S
IC38	PQVISN7L125S	IC	S
IC39	PQVISN7H32S	IC	
IC40	PQVISN7H32S	IC	
IC41	PQVISN7L86S	IC	S
IC42	PQVISN7L125S	IC	S
IC43	PSVIMC33063D	IC	
		(TRANSISTORS)	
Q1	2SB1237R	TRANSISTOR(SI)	S
Q2	PQVTDTC143E	TRANSISTOR(SI)	
Q3	2SB1070P	TRANSISTOR(SI)	
		(DIODES)	
D1	PSVDRB161LT	DIODE(SI)	
D3	PQVDNSQ03A04	DIODE(SI)	
D4	PSVDRB161LT	DIODE(SI)	
LED1	LN28RPXTA3	LED	S
LED2	LN28RPXTA3	LED	S
LED3	LN28RPXTA3	LED	S
LED4	LN28RPXTA3	LED	S
LED5	LN28RPXTA3	LED	S
		(CAPACITORS)	
C1	ECEA1EU331	330	
C2	ECUV1E104ZFV	0.1	
C3	ECUV1E104ZFV	0.1	
C4	ECUV1E104ZFV	0.1	
C5	ECUV1E104ZFV	0.1	
C6	ECUV1E104ZFV	0.1	
C7	ECUV1E104ZFV	0.1	
C8	ECUV1E104ZFV	0.1	
C9	ECUV1E104ZFV	0.1	
C10	ECUV1H101JCV	100p	
C11	ECEA1AU331	330	
C12	ECEA1HU330	33	
C13	ECUV1C105KB	1	
C14	ECUV1C105KB	1	
C15	ECUV1C105KB	1	
C16	ECUV1E684KD	0.68	
C17	ECUV1E104ZFV	0.1	
C18	ECUV1E104ZFV	0.1	

Ref. No.	Part No.	Part Name & Description	Remarks
C19	ECUV1E104ZFV	0.1	
C20	ECUV1E104ZFV	0.1	
C21	ECUV1C224ZFV	0.22	
C22	ECUV1C224ZFV	0.22	
C23	ECUV1C224ZFV	0.22	
C24	ECUV1C224ZFV	0.22	
C25	ECUV1C224ZFV	0.22	
C26	ECUV1C224ZFV	0.22	
C27	ECUV1C224ZFV	0.22	
C28	ECUV1C224ZFV	0.22	
C29	ECUV1C224ZFV	0.22	
C30	ECUV1C224ZFV	0.22	
C31	ECUV1C224ZFV	0.22	
C32	ECUV1C224ZFV	0.22	
C33	ECUV1C224ZFV	0.22	
C34	ECUV1C224ZFV	0.22	
C35	ECUV1C224ZFV	0.22	
C36	ECUV1C224ZFV	0.22	
C37	ECUV1E104ZFV	0.1	
C38	ECUV1E104ZFV	0.1	
C39	ECUV1E104ZFV	0.1	
C40	ECUV1E104ZFV	0.1	
C41	ECUV1E104ZFV	0.1	
C42	ECUV1E104ZFV	0.1	
C43	ECUV1E104ZFV	0.1	
C44	ECUV1E104ZFV	0.1	
C45	ECA1AHG471	470p	
C46	ECUV1E104ZFV	0.1	
C47	ECUV1E104ZFV	0.1	
C48	ECUV1E104ZFV	0.1	
C49	ECUV1E104ZFV	0.1	
C50	ECUV1E104ZFV	0.1	
C51	ECUV1E104ZFV	0.1	
C52	ECUV1E104ZFV	0.1	
C53	ECUV1E104ZFV	0.1	
C54	ECUV1H390JCV	39p	
C55	ECUV1H560JCV	56p	
C56	ECUV1E104ZFV	0.1	
C57	ECUV1E104ZFV	0.1	
C58	ECUV1E104ZFV	0.1	
C59	ECUV1E104ZFV	0.1	
C60	ECUV1H470JCV	47p	
C61	ECUV1H470JCV	47p	
C62	ECUV1E104ZFV	0.1	
C63	ECUV1E104ZFV	0.1	
C64	ECUV1E104ZFV	0.1	
C65	ECUV1E104ZFV	0.1	
C66	ECUV1H102KBV	0.001	
C67	ECUV1E104ZFV	0.1	

Ref. No.	Part No.	Part Name & Description	Remarks
C68	ECUV1C473KBV	0.047	
C69	ECUV1E104ZFV	0.1	
C70	ECUV1E104ZFV	0.1	
C71	ECUV1E104ZFV	0.1	
C72	ECUV1E104ZFV	0.1	
C73	ECUV1E104ZFV	0.1	
C74	ECUV1E104ZFV	0.1	
C75	ECUV1E104ZFV	0.1	
C81	ECUV1E104ZFV	0.1	
C82	ECUV1E104ZFV	0.1	
C84	ECUV1E104ZFV	0.1	
C85	ECUV1E104ZFV	0.1	
C86	ECUV1E104ZFV	0.1	
C87	ECUV1E104ZFV	0.1	
C89	ECUV1E104ZFV	0.1	
C90	ECUV1E104ZFV	0.1	
C91	ECUV1E104ZFV	0.1	
C92	ECUV1E104ZFV	0.1	
C93	ECUV1E104ZFV	0.1	
C94	ECUV1E104ZFV	0.1	
C95	ECUV1E104ZFV	0.1	
C96	ECUV1E104ZFV	0.1	
C97	ECUV1E104ZFV	0.1	
C98	ECUV1E104ZFV	0.1	
C100	ECUV1E104ZFV	0.1	
C101	ECUV1H820JCV	82p	
C102	ECUV1E104ZFV	0.1	
C103	EECFE5R5474	0.547	
C104	ECEA1AU331	330	
C105	ECUV1C105KB	1	
C106	ECUV1C105KB	1	
C107	ECUV1C105KB	1	
C108	ECUV1E104ZFV	0.1	
C109	ECUV1E104ZFV	0.1	
C111	ECUV1E104ZFV	0.1	
C112	ECUV1E104ZFV	0.1	
C113	ECUV1E104ZFV	0.1	
C114	ECUV1E104ZFV	0.1	
C115	ECUV1E104ZFV	0.1	
C116	ECUV1E104ZFV	0.1	
C117	ECUV1E104ZFV	0.1	
C118	ECUV1E104ZFV	0.1	
		(RESISTORS)	
R1	PQRD1VJ220	22	
R2	ERJ3GEYJ561	560	
R4	ERJ3GEY0R00	0	
R5	ERJ3GEYJ330	33	
R6	ERJ3GEYJ330	33	

Ref. No.	Part No.	Part Name & Description	Remarks
R7	ERJ3GEYJ330	33	
R8	ERJ3GEYJ330	33	
R9	ERJ3GEYJ330	33	
R10	ERJ3GEYJ330	33	
R11	ERJ3GEYJ330	33	
R12	ERJ3GEYJ330	33	
R13	ERJ3GEYJ103	10k	
R14	ERJ3GEYJ103	10k	
R15	ERJ3GEYJ103	10k	
R16	ERJ3GEYJ103	10k	
R17	ERJ3GEYJ103	10k	
R18	ERJ3GEYJ103	10k	
R19	ERJ3GEYJ103	10k	
R20	ERJ3GEYJ103	10k	
R21	ERJ3GEYJ103	10k	
R22	ERJ3GEYJ103	10k	
R23	ERJ3GEYJ103	10k	
R24	ERJ3GEYJ103	10k	
R25	ERJ3GEYJ103	10k	
R26	ERJ3GEYJ103	10k	
R27	ERJ3GEYJ103	10k	
R28	ERJ3GEYJ103	10k	
R29	ERJ3GEYJ103	10k	
R30	ERJ3GEYJ103	10k	
R31	ERJ3GEYJ103	10k	
R32	ERJ3GEYJ103	10k	
R33	ERJ3GEYJ103	10k	
R34	ERJ3GEYJ103	10k	
R35	ERJ3GEYJ103	10k	
R36	ERJ3GEYJ103	10k	
R37	ERJ3GEYJ103	10k	
R38	ERJ3GEYJ103	10k	
R39	ERJ3GEYJ103	10k	
R40	ERJ3GEYJ103	10k	
R41	ERJ3GEYJ103	10k	
R42	ERJ3GEYJ103	10k	
R43	ERJ3GEYJ103	10k	
R44	ERJ3GEYJ103	10k	
R45	ERJ3GEYJ103	10k	
R46	ERJ3GEYJ103	10k	
R47	ERJ3GEYJ103	10k	
R48	ERJ3GEYJ103	10k	
R49	ERJ3GEYJ103	10k	
R50	ERJ3GEYJ103	10k	
R51	ERJ3GEYJ103	10k	
R52	ERJ3GEYJ103	10k	
R53	ERJ3GEYJ103	10k	
R54	ERJ3GEYJ103	10k	
R55	ERJ3GEYJ103	10k	

Ref. No.	Part No.	Part Name & Description	Remarks
R56	ERJ3GEYJ103	10k	
R57	PQ4R10XJ4R7	4.7	S
R58	PQ4R10XJ4R7	4.7	S
R59	PQ4R10XJ101	100	S
R60	ERJ3GEYJ103	10k	
R61	ERJ3GEYJ103	10k	
R62	ERJ3GEYJ103	10k	
R63	ERJ3GEYJ103	10k	
R65	ERJ3GEYJ103	10k	
R66	ERJ3GEYJ103	10k	
R69	ERJ3GEYJ101	100	
R70	ERJ3GEYJ105	1M	
R73	ERJ3GEYJ103	10k	
R74	ERJ3GEYJ103	10k	
R75	ERJ3GEYJ103	10k	
R76	ERJ3GEYJ103	10k	
R77	ERJ3GEYJ103	10k	
R78	ERJ3GEYJ103	10k	
R79	ERJ3GEYJ470	47	
R80	ERJ3GEYJ102	1k	
R81	ERJ3GEYJ102	1k	
R82	ERJ3GEYJ102	1k	
R83	ERJ3GEYJ102	1k	
R84	ERJ3GEYJ105	1M	
R85	ERJ3GEYJ103	10k	
R86	ERJ3GEYJ103	10k	
R87	ERJ3GEYJ103	10k	
R88	ERJ3GEYJ103	10k	
R89	ERJ3GEYJ103	10k	
R90	ERJ3GEYJ103	10k	
R91	ERJ3GEYJ103	10k	
R92	ERJ3GEYJ103	10k	
R93	ERJ3GEYJ103	10k	
R94	ERJ3GEYJ103	10k	
R95	ERJ3GEYJ103	10k	
R96	ERJ3GEYJ102	1k	
R97	ERJ3GEYJ103	10k	
R98	ERJ3GEYJ103	10k	
R99	ERJ3GEYJ103	10k	
R100	ERJ3GEYJ103	10k	
R101	ERJ3GEYJ103	10k	
R102	ERJ3GEYJ333	33k	
R103	ERJ3GEYJ333	33k	
R104	ERJ3GEYJ333	33k	
R105	ERJ3GEYJ333	33k	
R106	ERJ3GEYJ333	33k	
R107	ERJ3GEYJ333	33k	
R108	ERJ3GEYJ333	33k	
R109	ERJ3GEYJ333	33k	

Ref. No.	Part No.	Part Name & Description	Remarks
R110	ERJ3GEYJ333	33k	
R111	ERJ3GEYJ333	33k	
R112	ERJ3GEYJ333	33k	
R113	ERJ3GEYJ333	33k	
R114	ERJ3GEYJ333	33k	
R115	ERJ3GEYJ333	33k	
R116	ERJ3GEYJ333	33k	
R117	ERJ3GEYJ333	33k	
R118	ERJ3GEYJ333	33k	
R119	ERJ3GEYJ333	33k	
R120	ERJ3GEYJ333	33k	
R121	ERJ3GEYJ333	33k	
R122	ERJ3GEYJ333	33k	
R123	ERJ3GEYJ333	33k	
R124	ERJ3GEYJ333	33k	
R125	ERJ3GEYJ333	33k	
R126	ERJ3GEYJ333	33k	
R127	ERJ3GEYJ333	33k	
R128	ERJ3GEYJ333	33k	
R129	ERJ3GEYJ333	33k	
R130	ERJ3GEYJ333	33k	
R131	ERJ3GEYJ333	33k	
R132	ERJ3GEYJ333	33k	
R133	ERJ3GEYJ333	33k	
R134	ERJ3GEYJ333	33k	
R135	ERJ3GEYJ333	33k	
R136	ERJ3GEYJ333	33k	
R137	ERJ3GEYJ333	33k	
R138	ERJ3GEYJ333	33k	
R139	ERJ3GEYJ333	33k	
R140	ERJ3GEYJ333	33k	
R141	ERJ3GEYJ333	33k	
R142	ERJ3GEYJ333	33k	
R143	ERJ3GEYJ333	33k	
R144	ERJ3GEYJ333	33k	
R145	ERJ3GEYJ333	33k	
R146	ERJ3GEYJ333	33k	
R147	ERJ3GEYJ333	33k	
R148	ERJ3GEYJ333	33k	
R149	ERJ3GEYJ333	33k	
R150	ERJ3GEYJ333	33k	
R151	ERJ3GEYJ333	33k	
R152	ERJ3GEYJ333	33k	
R153	ERJ3GEYJ333	33k	
R154	ERJ3GEYJ333	33k	
R155	ERJ3GEYJ333	33k	
R156	ERJ3GEYJ333	33k	
R157	ERJ3GEYJ333	33k	
R158	ERJ3GEYJ333	33k	

Ref. No.	Part No.	Part Name & Description	Remarks
R159	ERJ3GEYJ333	33k	
R160	ERJ3GEYJ333	33k	
R161	ERJ3GEYJ333	33k	
R162	ERJ3GEYJ333	33k	
R163	ERJ3GEYJ333	33k	
R164	ERJ3GEYJ333	33k	
R165	ERJ3GEYJ333	33k	
R166	ERJ3GEYJ333	33k	
R167	ERJ3GEY0R00	0	
R168	ERJ3GEY0R00	0	
R169	ERJ3GEYJ103	10k	
R171	ERJ3GEYJ103	10k	
R172	ERJ3GEYJ103	10k	
R177	ERJ3GEYJ103	10k	
R178	ERJ3GEYJ103	10k	
R179	ERJ3GEYJ103	10k	
R180	ERJ3GEYJ103	10k	
R181	ERJ3GEYJ103	10k	
R182	ERJ3GEYJ103	10k	
R183	ERJ3GEYJ103	10k	
R184	ERJ3GEYJ103	10k	
R185	ERJ3GEYJ822	8.2k	
R188	ERJ3GEYJ330	33	
R189	ERJ3GEY0R00	0	
R190	ERJ3GEYJ103	10k	
R191	ERJ3GEYJ272	2.7k	
R192	ERJ3GEY0R00	0	
R193	ERJ3GEYJ331	330	
R195	ERJ3GEYJ331	330	
R196	ERJ3GEYJ103	10k	
R197	ERJ3GEYJ103	10k	
R198	ERJ3GEYJ103	10k	
R199	ERJ3GEY0R00	0	
R201	ERJ3GEYJ103	10k	
R202	ERJ3GEYJ103	10k	
R203	ERJ3GEYJ103	10k	
R204	ERJ3GEYJ330	33	
R205	ERJ3GEYJ330	33	
R206	ERJ3GEYJ330	33	
R207	ERJ3GEYJ330	33	
R208	ERJ3GEYJ151	150	
R209	ERJ3GEYJ151	150	
R210	ERJ3GEYJ330	33	
R211	ERJ3GEYJ103	10k	
R212	ERJ3GEY0R00	0	
R214	ERJ3GEYJ330	33	
R215	ERJ3GEYJ330	33	
R216	ERJ3GEYJ330	33	

Ref. No.	Part No.	Part Name & Description	Remarks
R217	ERJ3GEYJ330	33	
R218	ERJ3GEYJ330	33	
R219	ERJ3GEYJ330	33	
R220	ERJ3GEYJ330	33	
R221	ERJ3GEYJ330	33	
R222	ERJ3GEYJ330	33	
R223	ERJ3GEYJ330	33	
R224	ERJ3GEYJ330	33	
R225	ERJ3GEYJ330	33	
R226	ERJ3GEYJ330	33	
R227	ERJ3GEYJ330	33	
R228	ERJ3GEYJ330	33	
R229	ERJ3GEYJ330	33	
R230	ERJ3GEYJ330	33	
J14	ERJ3GEY0R00	0	
J15	ERJ3GEY0R00	0	
J18	ERJ3GEY0R00	0	
J19	ERJ3GEY0R00	0	
J6	ERJ3GEY0R00	0	
L1	ERJ6GEY0R00	0	
L2	ERJ6GEY0R00	0	
L3	ERJ6GEY0R00	0	
L4	ERJ6GEY0R00	0	
L44	ERJ6GEY0R00	0	
L45	ERJ6GEY0R00	0	
L46	ERJ6GEY0R00	0	
L51	ERJ6GEY0R00	0	
L53	ERJ6GEY0R00	0	
		(COILS)	
L5	PQLQR1RM601	COIL	
L6	PQLQR1RM601	COIL	
L7	PQLQR1RM601	COIL	
L8	PQLQR1RM601	COIL	
L9	PQLQR1RM601	COIL	
L10	PQLQR1RM601	COIL	
L11	PQLQR1RM601	COIL	
L12	PQLQR1RM601	COIL	
L13	PQLQR1RM601	COIL	
L14	PQLQR1RM601	COIL	
L15	PQLQR1RM601	COIL	
L16	PQLQR1RM601	COIL	
L17	PQLQR1RM601	COIL	
L18	PQLQR1RM601	COIL	
L19	PQLQR1RM601	COIL	
L20	PQLQR1RM601	COIL	

Ref. No.	Part No.	Part Name & Description	Remarks
L21	PQLQR1RM601	COIL	
L22	PQLQR1RM601	COIL	
L23	PQLQR1RM601	COIL	
L24	PQLQR1RM601	COIL	
L25	PQLQR1RM601	COIL	
L26	PQLQR1RM601	COIL	
L27	PQLQR1RM601	COIL	
L28	PQLQR1RM601	COIL	
L29	PQLQR1RM601	COIL	
L30	PQLQR1RM601	COIL	
L31	PQLQR1RM601	COIL	
L32	PQLQR1RM601	COIL	
L33	PQLQR1RM601	COIL	
L34	PQLQR1RM601	COIL	
L35	PQLQR1RM601	COIL	
L36	PQLQR1RM601	COIL	
L37	PQLQR1RM601	COIL	
L38	PQLQR1RM601	COIL	
L39	PQLQR1RM601	COIL	
L40	PQLQR1RM601	COIL	
L41	PQLQR1RM601	COIL	
L42	PQLQR1RM601	COIL	
L43	PQLQR1RM601	COIL	
L52	PSLQR1Z101M	COIL	
L54	PSLE1039	COIL	
L55	PSLE1039	COIL	
		(JACK AND CONNECTORS)	
CN1	PQJS60R96Z	CONNECTOR,60P	
CN2	PSJJ1T002Z	JACK	
JS1	PSJS32A08Z	CONNECTOR,32P	
JS2	PSJS32A08Z	CONNECTOR,32P	
		(VARISTORS)	
SA1	PSVDT83A230X	VARISTOR(SURGE ABSORBER)	⚠
SA5	PSVDT83A230X	VARISTOR(SURGE ABSORBER)	⚠
SA6	PQVDDSV301L	VARISTOR(SURGE ABSORBER)	⚠
		(TRANSFORMERS)	
T1	PSLT9Z17A	TRANSFORMER	⚠
T2	PSLT9Z16A	TRANSFORMER	⚠
		(THERMISTORS)	
TH1	PSRPR600160B	THERMISTOR	
TH2	PSRPR600160B	THERMISTOR	
TH3	PSRPR600160B	THERMISTOR	
TH4	PSRPR600160B	THERMISTOR	
		(CRYSTAL OSCILLATORS)	

Ref. No.	Part No.	Part Name & Description	Remarks
X1	PSVCC0036DT	CRYSTAL OSCILLATOR	
X2	PSVCCR0819D2	CRYSTAL OSCILLATOR	S
		(CERAMIC FILTER)	
FLT1	PQVFTU50MT	CERAMIC FILTER	

10. BLOCK DIAGRAM

11. SCHEMATIC DIAGRAM

11.1. NO.1

11.2. NO.2

11.3. NO.3

11.4. NO.4

12. VOLTAGE WAVE

12.1. NO.1

12.2. NO.2

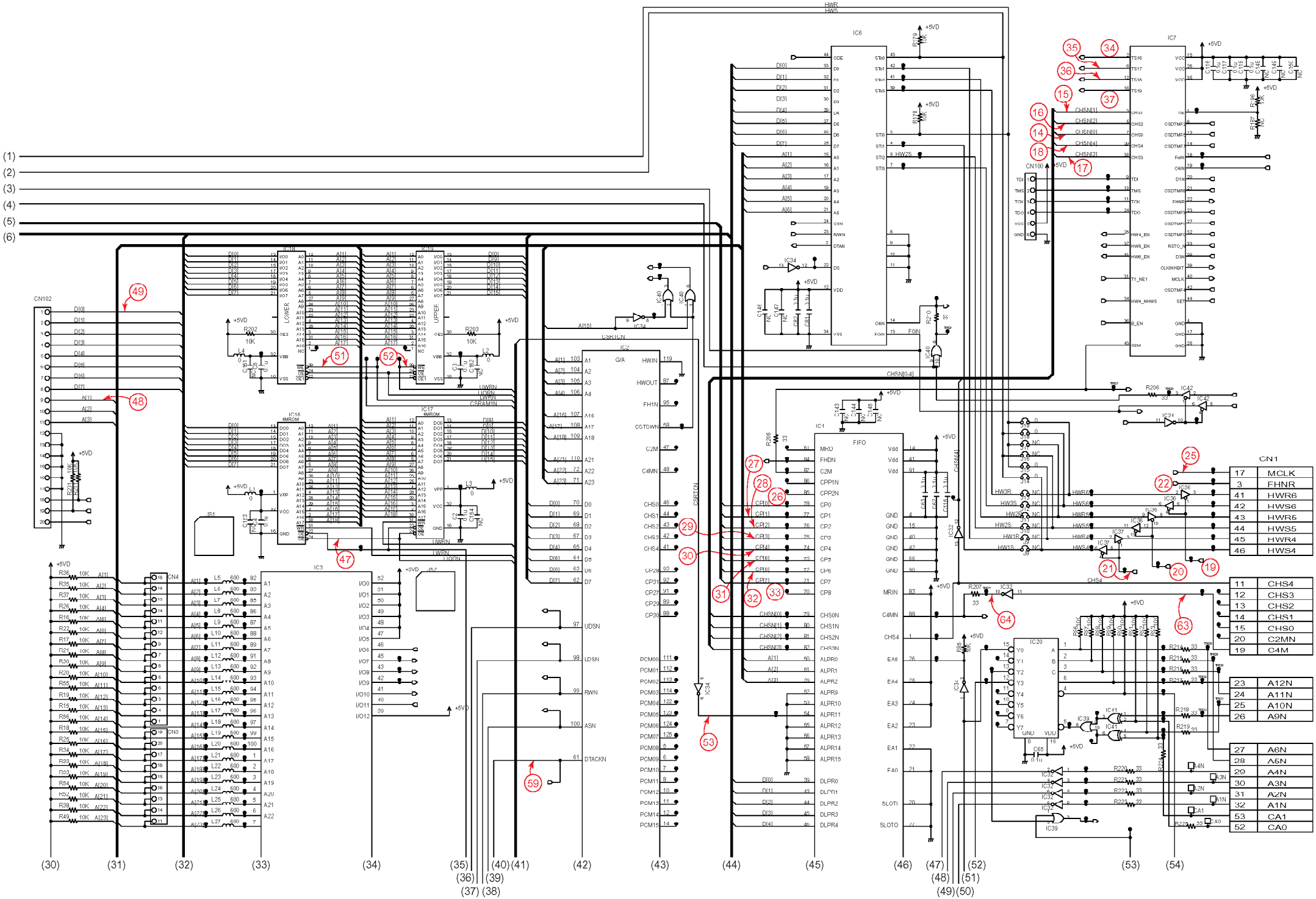
13. TIMING CHART

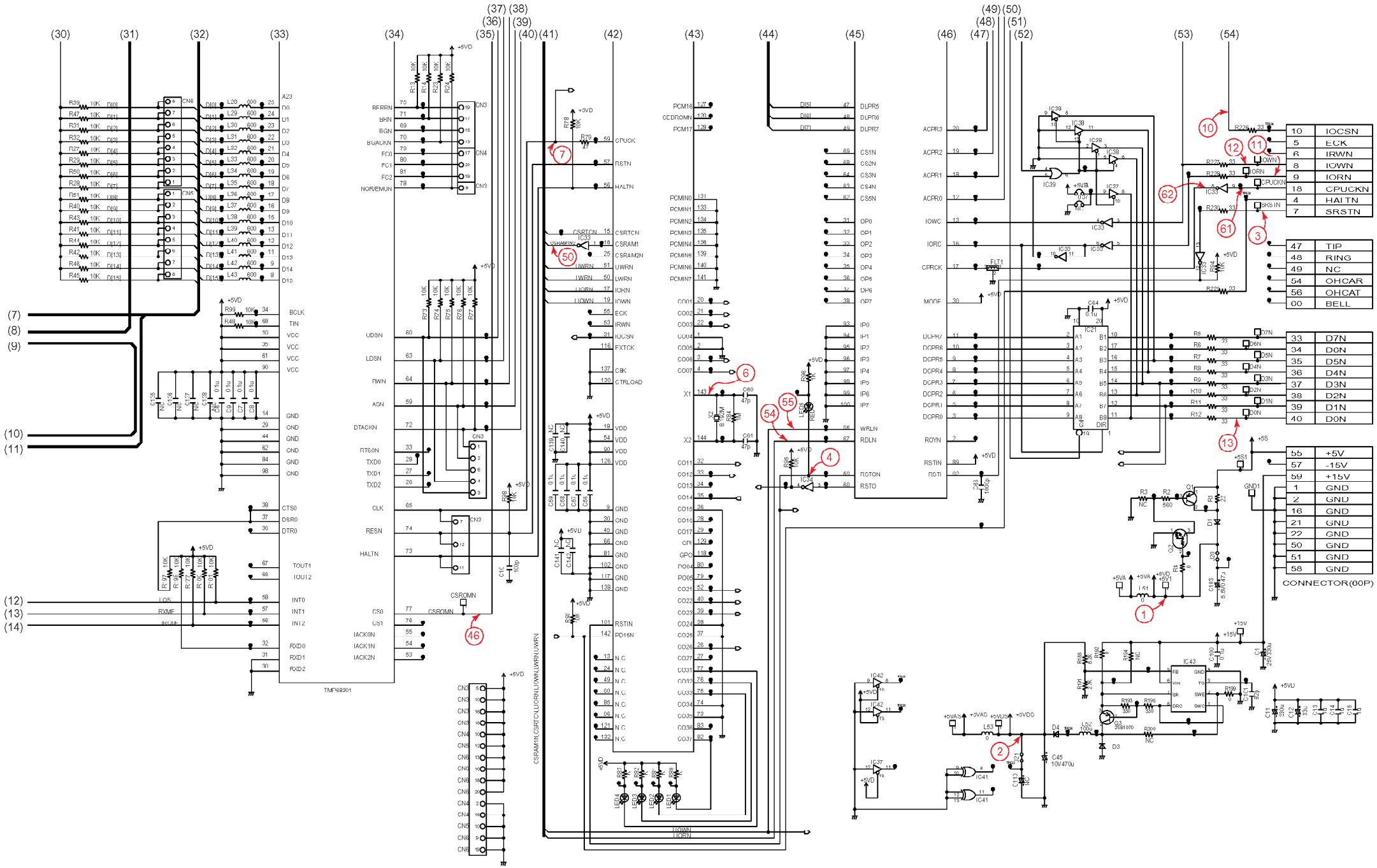
14. CIRCUIT DIAGRAM

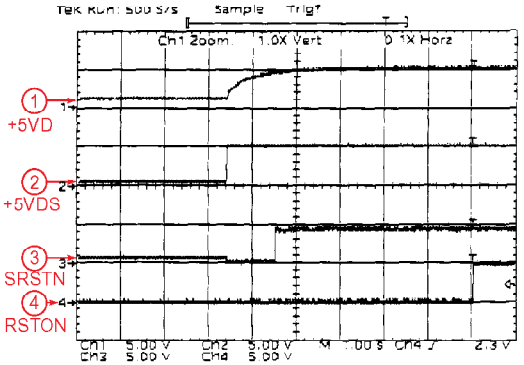
14.1. COMPONENT VIEW

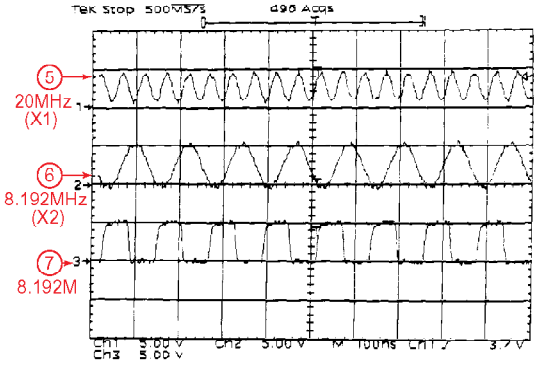
14.2. BOTTOM VIEW

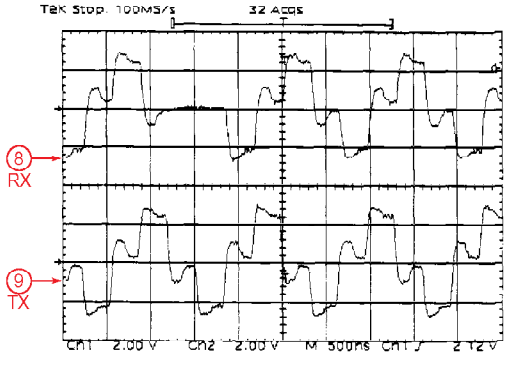
A(Q) KXTD187C / Printed in Japan


CN1
17 MCLK
3 FHNR
41 HWR6
42 HWS6
43 HWR5
44 HWS5
45 HWR4
46 HWS4
11 CHS4
12 CHS3
13 CHS2
14 CHS1
15 CHS0
20 C2MN
19 C4M
23 A12N
24 A11N
25 A10N
26 A9N
27 A6N
28 A5N
29 A4N
30 A3N
31 A2N
32 A1N
53 CA1
52 CA0
IC1 FIFO
IC2 G/A
IC3
IC6
IC7
IC8 LOWER
IC16 4MROM
IC17 4MROM
IC19 UPPER
IC20
CN102
CN4
CN5
CN100
+5VD
HWR
HWS
CHSN[0-4]
CSRDN
CSWRN
UWRN
LWRN
CSRAM1N
(1)
(2)
(3)
(4)
(5)
(6)
(30) (31) (32) (33) (34) (35) (36) (37) (38) (39) (40) (41) (42) (43) (44) (45) (46) (47) (48) (49) (50) (51) (52) (53) (54)


TMP68301
CONNECTOR(60P)
10 IOCSN
5 ECK
6 IRWN
8 IOWN
9 IORN
18 CPUCKN
4 HALTN
7 SRSTN
47 TIP
48 RING
49 NC
54 OHCAR
56 OHCAT
60 BELL
33 D7N
34 D0N
35 D5N
36 D4N
37 D3N
38 D2N
39 D1N
40 D0N
55 +5V
57 -15V
59 +15V
1 GND
2 GND
16 GND
21 GND
22 GND
50 GND
51 GND
58 GND







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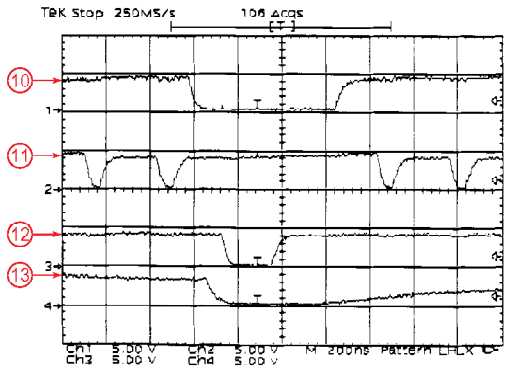

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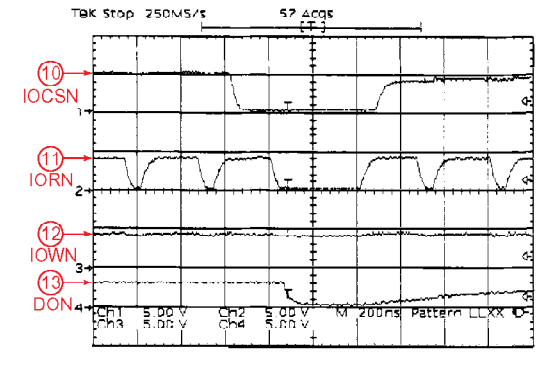
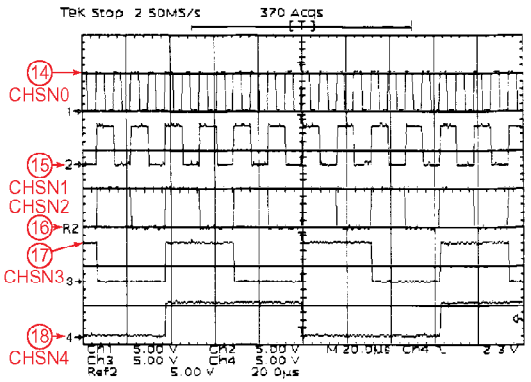
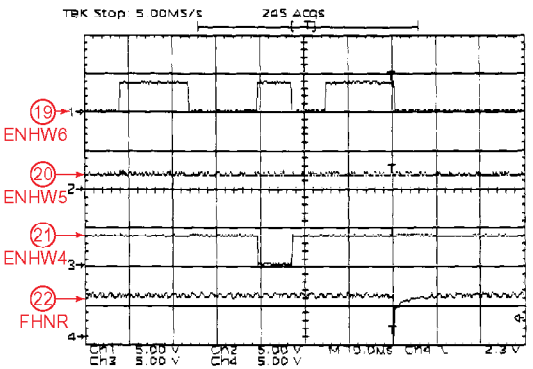
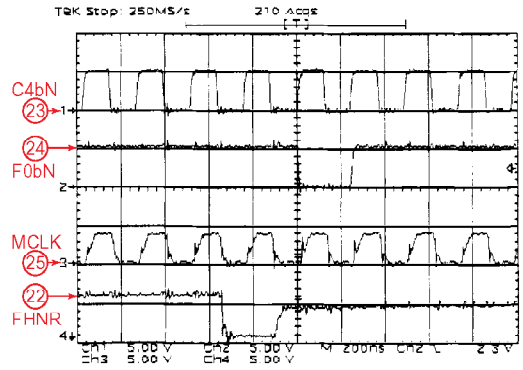
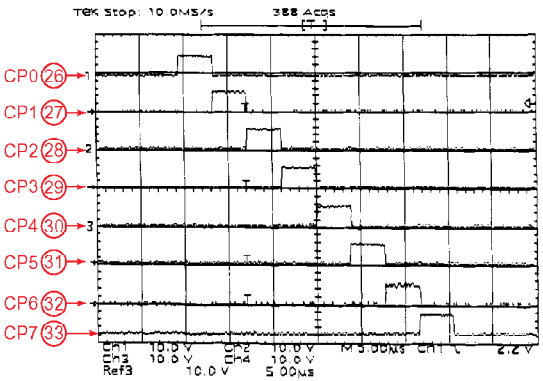
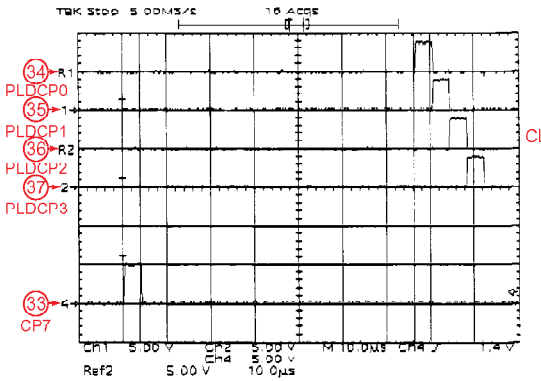


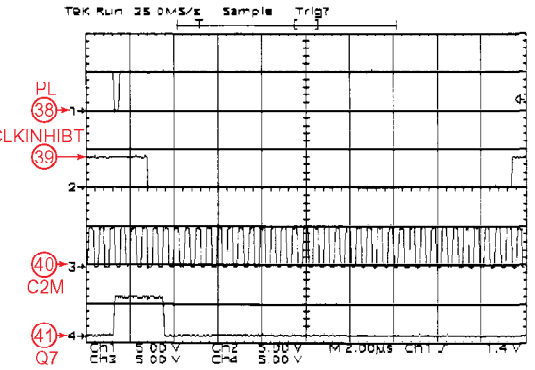


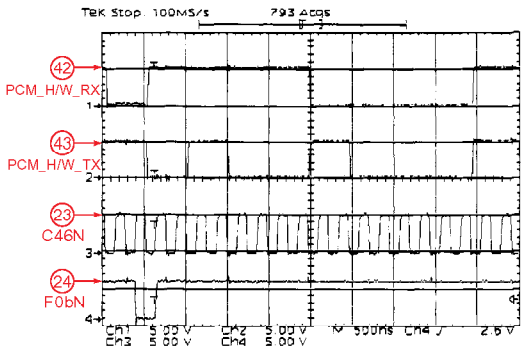


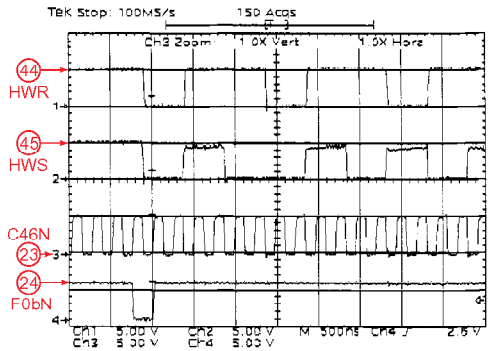




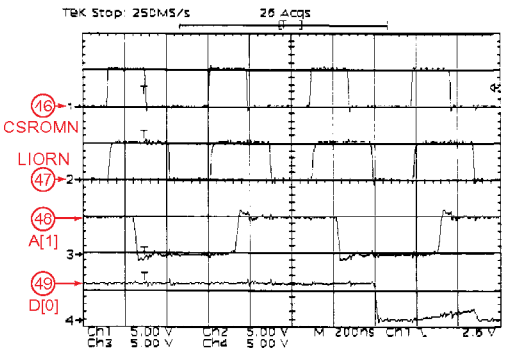




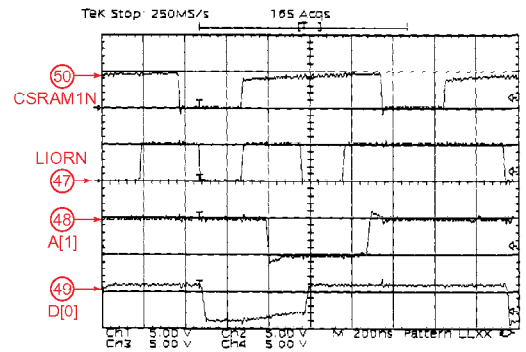




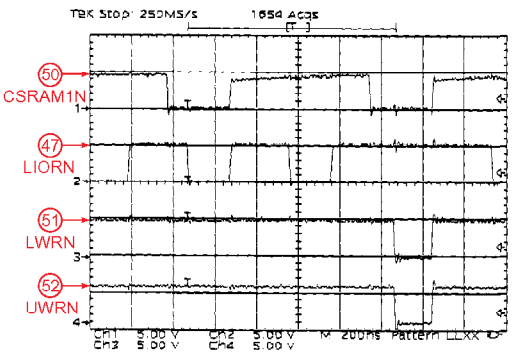
Flash Memory Read



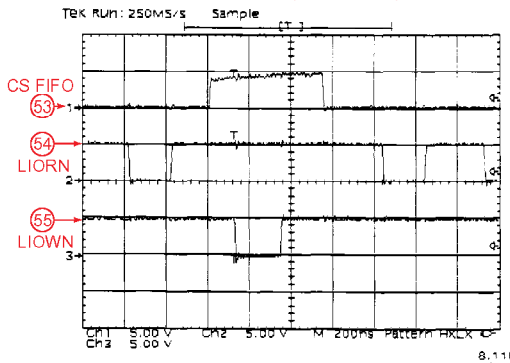
SRAM Read



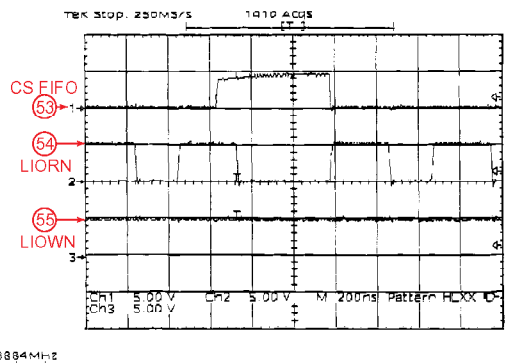
SRAM Write



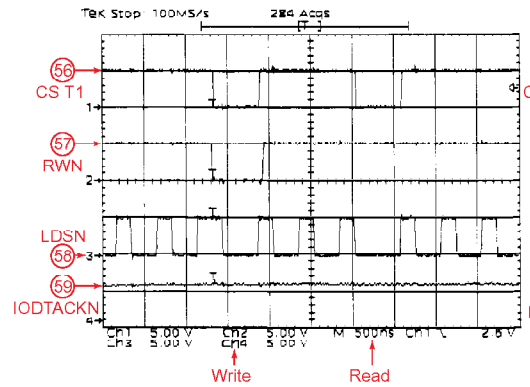
FIFO Write (from T1 CPU)



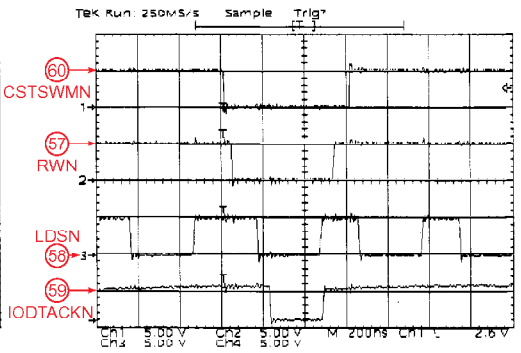
FIFO Read (from T1 CPU)

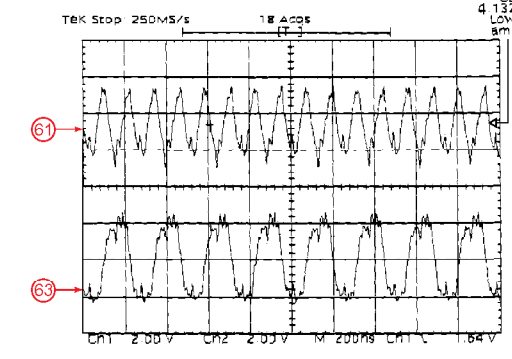


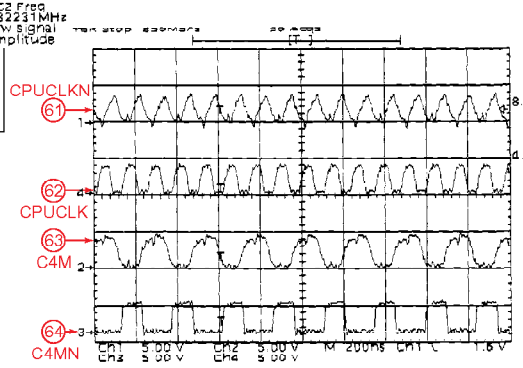
T1/E1 Read/Write

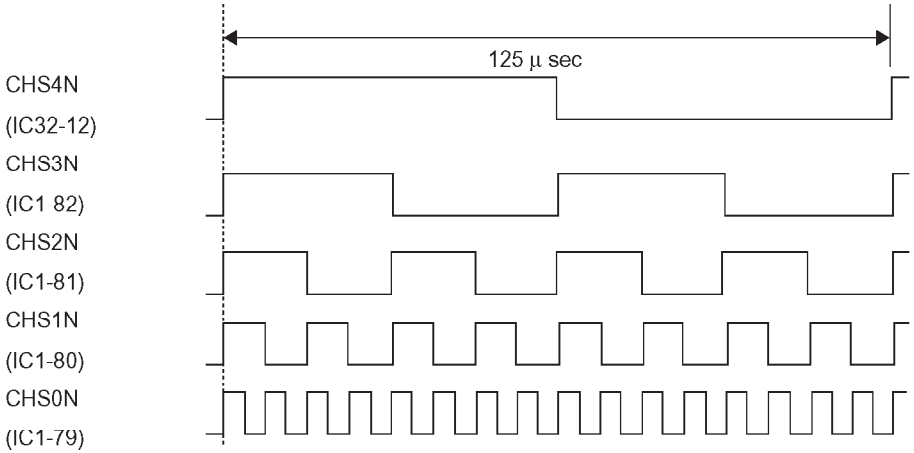


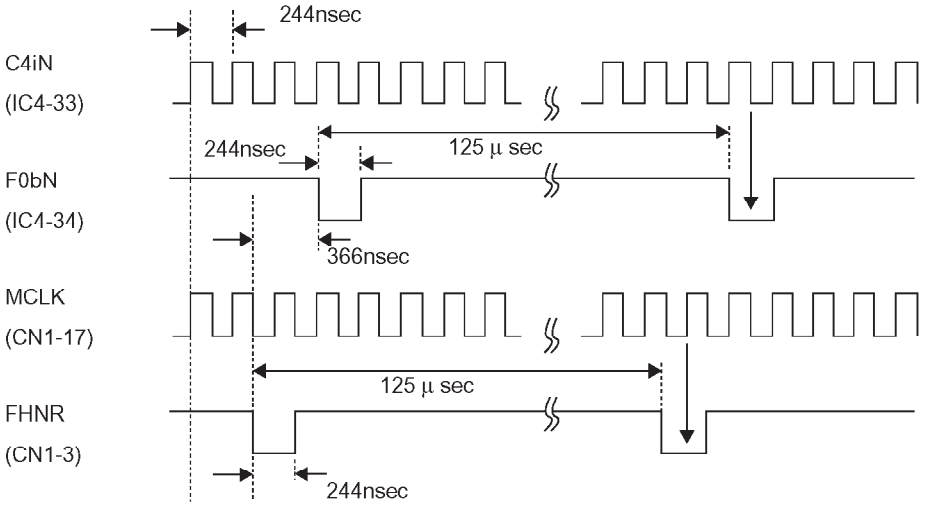
TSW Write

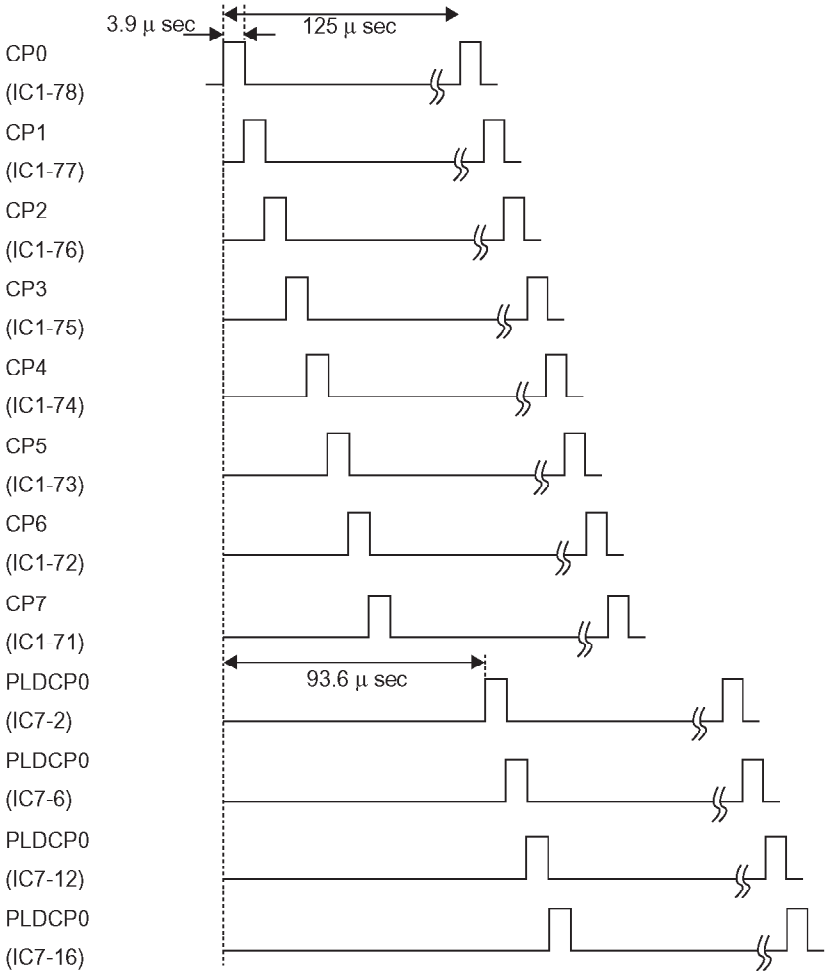


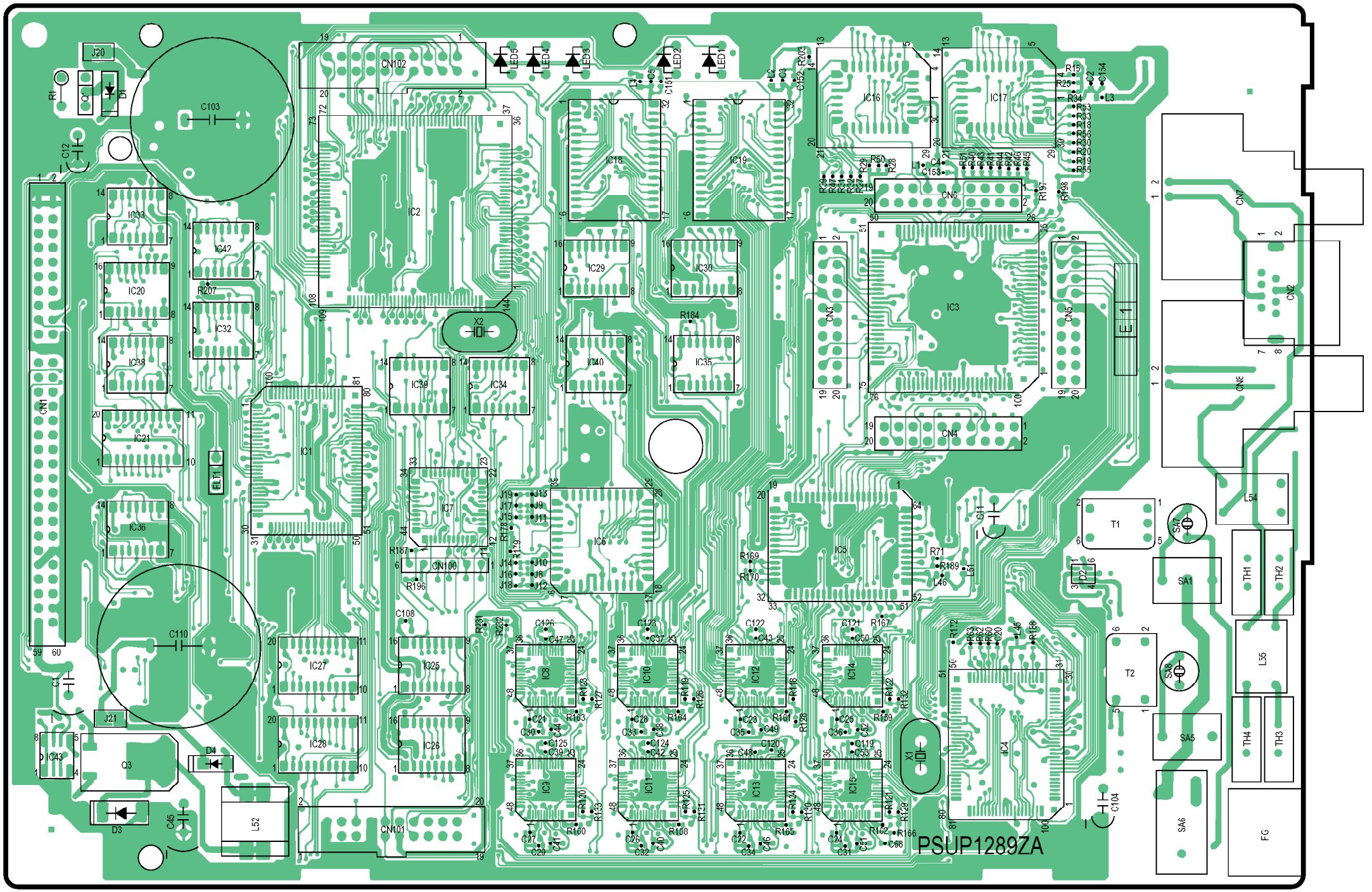


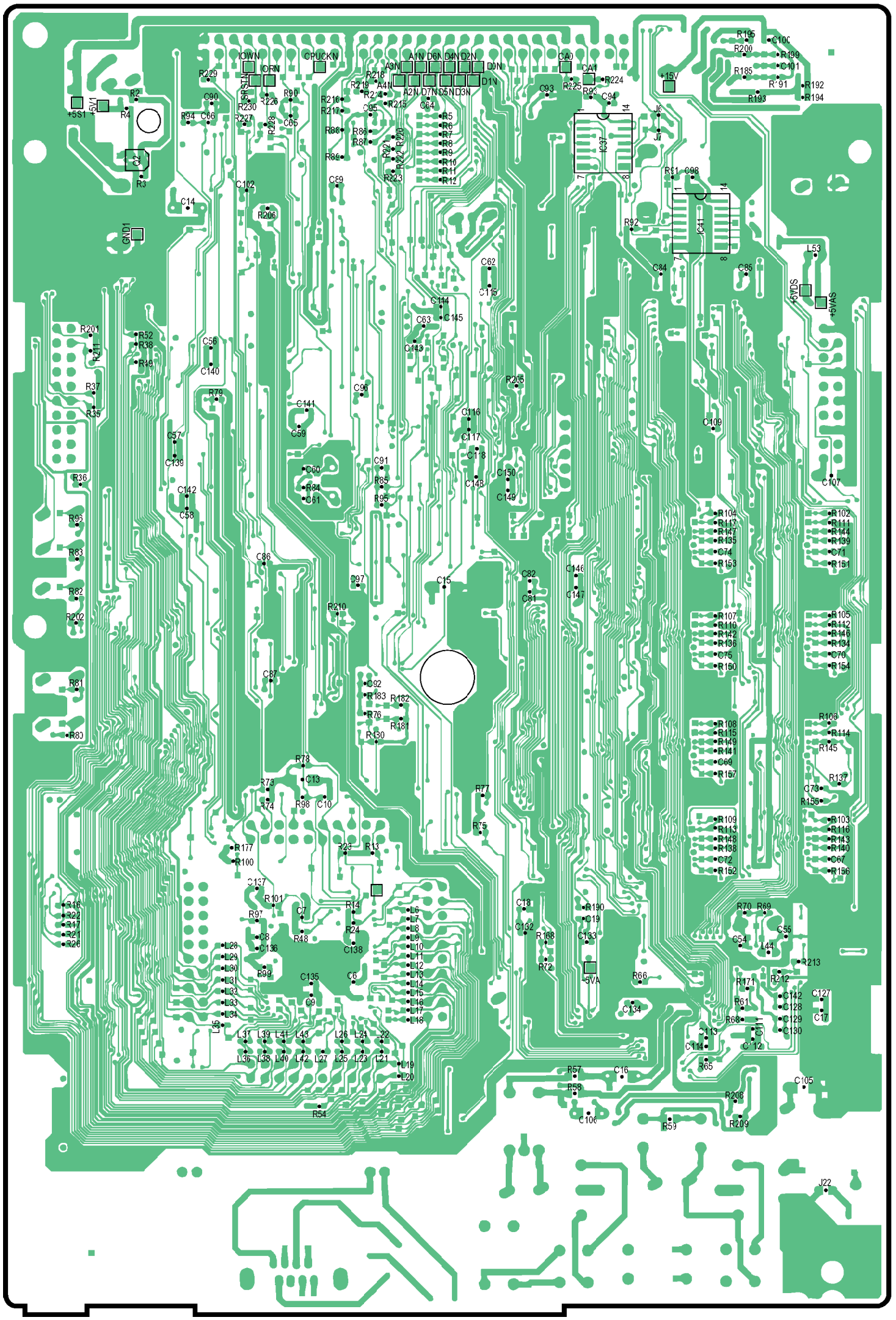


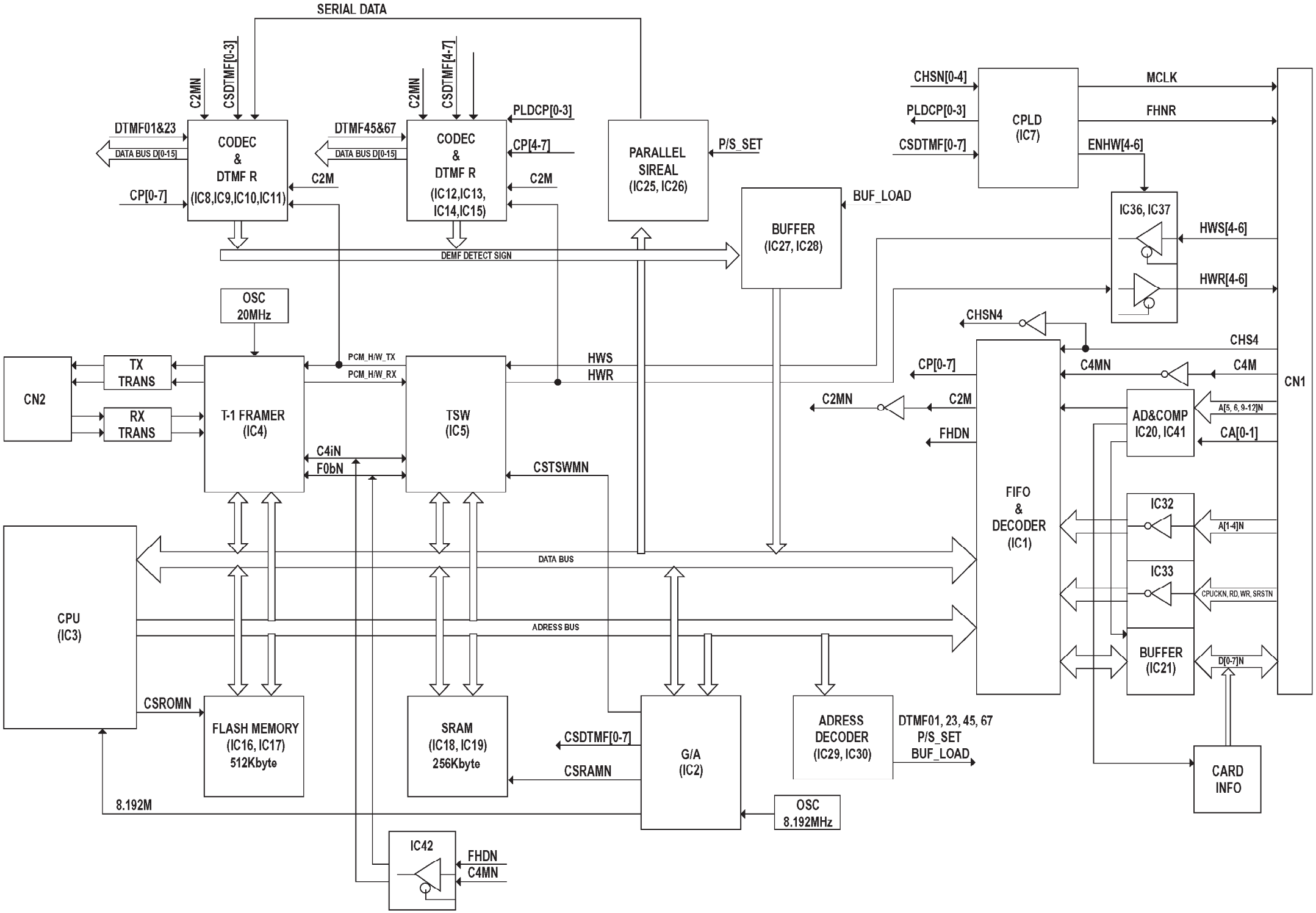

125 μ sec
CHS4N
(IC32-12)
CHS3N
(IC1 82)
CHS2N
(IC1-81)
CHS1N
(IC1-80)
CHS0N
(IC1-79)

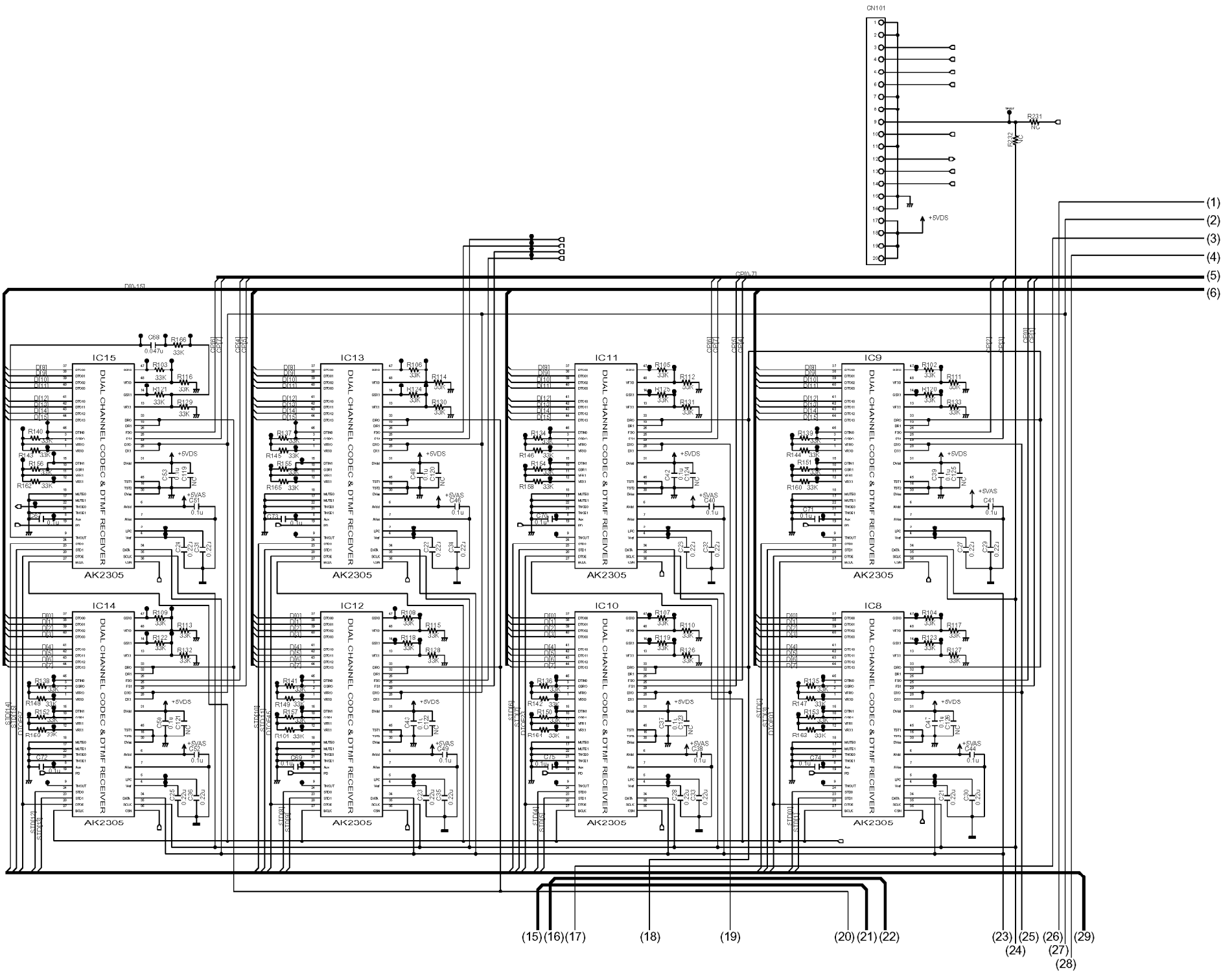

244nsec
C4iN
(IC4-33)
244nsec
125 μ sec
F0bN
(IC1-31)
366nsec
MCLK
(CN1-17)
125 μ sec
FHNR
(CN1-3)
244nsec

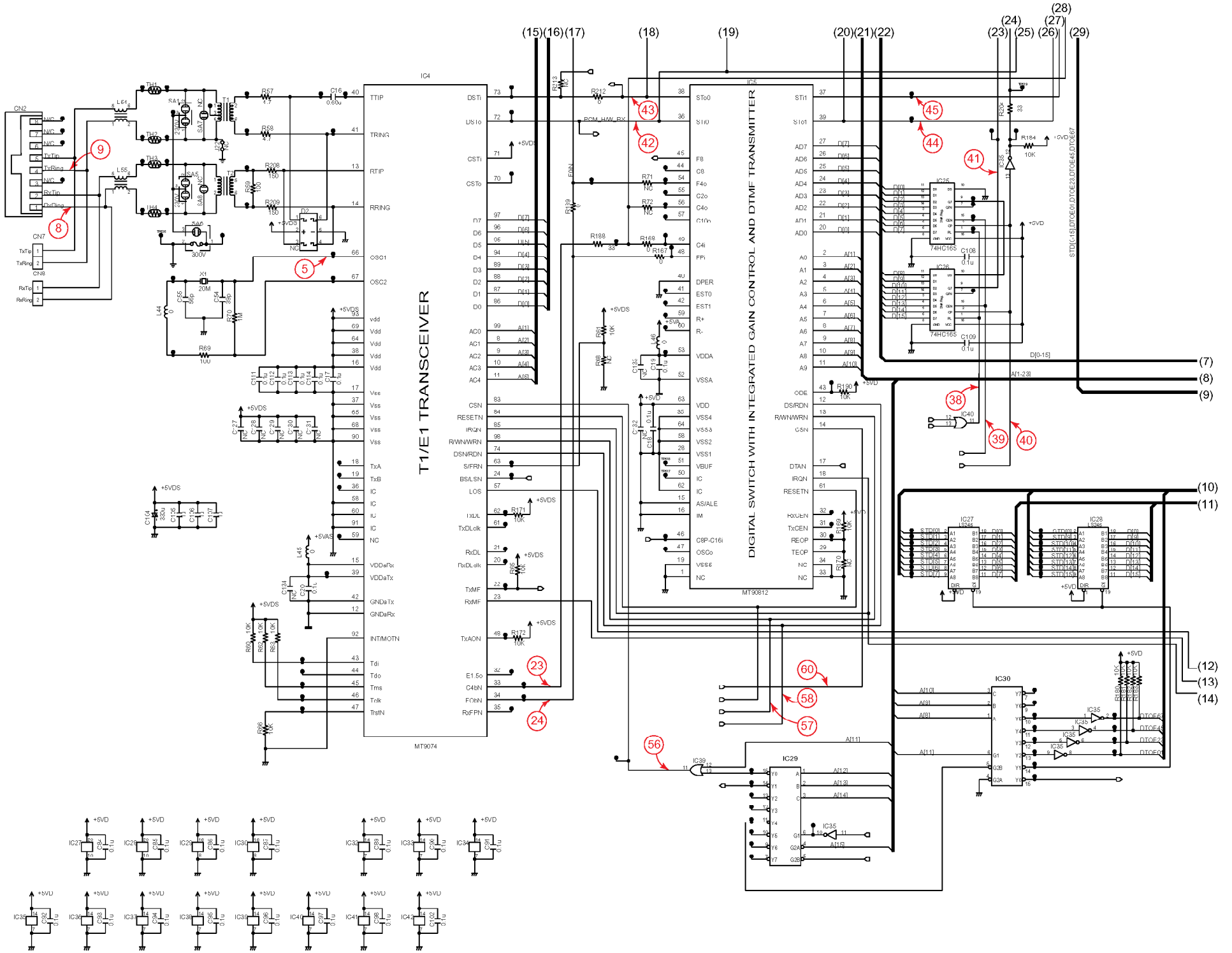

3.9 μ sec
125 μ sec
CP0
(IC1-78)
CP1
(IC1-77)
CP2
(IC1-76)
CP3
(IC1-75)
CP4
(IC1-74)
CP5
(IC1-73)
CP6
(IC1-72)
CP7
(IC1 71)
93.6 μ sec
PLDCP0
(IC7-2)
PLDCP0
(IC7-6)
PLDCP0
(IC7-12)
PLDCP0
(IC7-16)


PSUP1289ZA


IOWN
IORN
CPUCKN
SRSTN
A3N
A1N D6N D4N D2N
D3N D1N
A2N D7N D5N D3N
CA0
CA1
+15V
+5S1
+5V1
GND1
+5VDS
+5VAS
-5VA
IC37
IC41
J6
J7
J22


SERIAL DATA
C2MN
CSDTMF[0-3]
C2MN
CSDTMF[4-7]
DTMF01&23
DATA BUS D[0-15]
CODEC
&
DTMF R
(IC8,IC9,IC10,IC11)
CP[0-7]
C2M
DTMF45&67
DATA BUS D[0-15]
CODEC
&
DTMF R
(IC12,IC13,
IC14,IC15)
PLDCP[0-3]
CP[4-7]
C2M
PARALLEL
SIREAL
(IC25, IC26)
P/S_SET
BUF_LOAD
BUFFER
(IC27, IC28)
DEMF DETECT SIGN
CHSN[0-4]
PLDCP[0-3]
CSDTMF[0-7]
CPLD
(IC7)
MCLK
FHNR
ENHW[4-6]
IC36, IC37
HWS[4-6]
HWR[4-6]
OSC
20MHz
CHSN4
CHS4
CN2
TX
TRANS
RX
TRANS
T-1 FRAMER
(IC4)
PCM_H/W_TX
PCM_H/W_RX
C4iN
F0bN
TSW
(IC5)
HWS
HWR
CSTSWMN
CP[0-7]
C4MN
C4M
C2MN
C2M
FHDN
AD&COMP
IC20, IC41
A[5, 6, 9-12]N
CA[0-1]
CN1
FIFO
&
DECODER
(IC1)
IC32
A[1-4]N
IC33
CPUCKN, RD, WR, SRSTN
BUFFER
(IC21)
D[0-7]N
DATA BUS
ADRESS BUS
CPU
(IC3)
CSROMN
FLASH MEMORY
(IC16, IC17)
512Kbyte
SRAM
(IC18, IC19)
256Kbyte
CSDTMF[0-7]
CSRAMN
G/A
(IC2)
ADRESS
DECODER
(IC29, IC30)
DTMF01, 23, 45, 67
P/S_SET
BUF_LOAD
CARD
INFO
8.192M
OSC
8.192MHz
IC42
FHDN
C4MN


CN101
+5VDS
R231
NC
R232
NC
(1)
(2)
(3)
(4)
(5)
(6)
DI[0-15]
CP[0-7]
IC15
IC14
IC13
IC12
IC11
IC10
IC9
IC8
DUAL CHANNEL CODEC & DTMF RECEIVER
AK2305
+5VDS
+5VAS
(15)
(16)
(17)
(18)
(19)
(20)
(21)
(22)
(23)
(24)
(25)
(26)
(27)
(28)
(29)


IC4
T1/E1 TRANSCEIVER
MT9074
IC5
DIGITAL SWITCH WITH INTEGRATED GAIN CONTROL AND DTMF TRANSMITTER
MT90812
IC25
74HC165
IC26
74HC165
IC27
LS245
IC28
LS245
IC29
IC30
IC35
IC39
IC40
CN2
CN7
CN8
X1
20M
+5VDS
+5VD
+5VA
(15)(16)(17)
(18)
(19)
(20)(21)(22)
(23)
(24)
(25)
(26)
(27)
(28)
(29)
D[0-15]
A[1-23]
STD[0-15] DTOE01 DTOE23 DTOE45 DTOE67